

U.S Fish & Wildlife Service

Pacific Region Report on Columbia River Basin Accomplishments

Fiscal Year 2003



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Summary

The following is a summary of the Pacific Region's accomplishments on conservation of the Endangered Species Act (ESA) listed aquatic species in the Columbia River Basin (Fiscal Year 2003).

The Columbia River Basin is the second largest river basin in the United States and covers an area of 259,000 square miles. Its geographic boundaries include major portions of the states of Washington, Oregon, and Idaho; parts of Montana, Wyoming, Nevada, and Utah; and the Canadian provinces of British Columbia and Alberta. The Columbia River Basin contains 40 major dams operated by the

U.S. Army Corp of Engineers (COE), Bureau of Reclamation (BOR), and other Federal and non-Federal entities. It is estimated that the Basin was once home to the largest run of salmon and steelhead in the world. However, for more than 100 years, there has been a steady decline of salmon and steelhead populations in the Columbia River Basin. Prior to development, the Columbia River Basin produced an estimated 10-16 million adult salmon and steelhead that returned to the basin annually to spawn. Currently, only about 2-3 million adult salmon and steelhead return annually. The loss of 7-14 million fish is due primarily to



hydropower and to various factors including over-harvest, loss of habitat, urban development, and outmoded hatchery practices. Twelve populations of Columbia River Basin salmon and steelhead, bull trout, Kootenai River white sturgeon, and five species of Snake River snails are on the threatened and endangered species list.

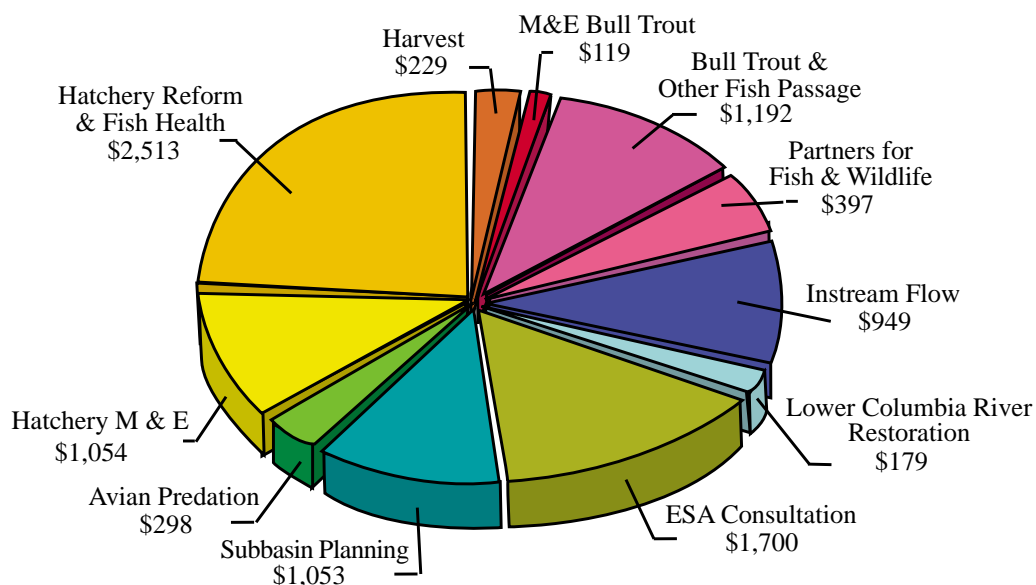
To address this issue, a consortium of Federal agencies (known as the Federal Caucus) developed the *Final Basin-wide Salmon Recovery Strategy (Strategy)* for salmon and steelhead in the Columbia River Basin. This *Strategy* outlines expected improvements in Habitat, Hatcheries, Hydropower, and Harvest (otherwise referred to as the All Hs) needed to meet the goals of the ESA and serves as a conceptual recovery plan for listed stocks of Pacific salmon and steelhead in the Columbia River Basin. The *Strategy* defines the roles and responsibilities for each Federal and non-Federal entity to ensure specific actions are addressed with adequate coordination. Furthermore, the *Strategy* provided a framework to implement the Federal Columbia River Power System (FCRPS) Biological Opinions (BiOps), other biological opinions applying to Federal

activities in the Basin, and other actions to recover fish by States, Tribes, and other entities (e.g. Northwest Power Planning Council's Artificial Production Review).

As required by various statutory, treaty and legal requirements (e.g. ESA, Anadromous Fish Conservation Act, Migratory Bird Act, Fish and Wildlife Coordination Act, and Pacific Salmon Treaty Act), the Service has a unique Federal role and is involved in nearly all programs to restore or recover listed or endangered aquatic species in the Columbia River Basin. The Service actively promotes the protection, conservation, and restoration of important fish and wildlife and their habitats throughout the Columbia River Basin.

In FY 2003, the Service dedicated \$9.7 million in base operational funds that directly implemented the objectives in the comprehensive *Strategy* and the respective BiOps. These resources helped ensure the Service made progress in meeting its ESA and other legal requirements. The following is a brief summary of the activities the Service conducted with the FY 2003 base funding in the Columbia River Basin.

FY 2003 Columbia River Basin Funding = \$9.7 M



HABITAT = \$5,678K

ESA Consultations (\$1,700K) – The *Strategy* identifies improved coordination between the Federal land managers and the Service as a component to the recovery of aquatic species in the Basin. To address this action, the Service streamlined section 7 consultations and provided technical assistance to the Bureau of Land Management (BLM) and the Forest Service (FS). ESA consultations provided critical biological expertise in the design and implementation of monitoring protocols to ensure sound science and financially feasible actions were taken to step-down ESA requirements. For example, the Service provided effective and timely consultations on 10 million acres of Federal land and over 60 instream miles. In addition, the Service accelerated consultations with FS, BLM and other agencies to ensure that potential adverse effects to bull trout (and other ESA-listed fish species) and their habitat were avoided or minimized.



Bull Trout

The Service also consulted with hydropower operators on bull trout conservation and recovery issues related to the operations of six dams (e.g. Anderson, Ranch, Arrowrock, and Lucky Peak Dams) and three hydropower plants and actively participated with hydropower operators to address the needs of Kootenai River white sturgeon.

Bull Trout Fish and Other Fish Passage (\$1,192K)– In cooperation with watershed councils, irrigators, and the States, the Service identified priority areas and directed funding to habitat restoration projects.

Funding improved fish passage and screening in the Columbia Basin by: 1) developing passage and screening guidance for the BOR and COE; and 2) restoring fish passage and screening projects identified in the subbasin plans. In FY 2003, the Service consulted with the FS on 600 culvert replacements in Oregon and Washington to benefit bull trout and anadromous salmonids. These culvert projects provided access to more than 12 miles of instream habitat in the South Fork Clearwater River.



Culvert before preventing fish passage.



Culvert after allowing fish passage

In addition, the Service assessed bull trout populations in the South Fork Walla Walla River and expanded work to include the North Fork Umatilla River.

This activity utilized Passive Integrated Transponder (PIT) tags to monitor, evaluate and understand bull trout populations. Results from this project will aid in bull trout recovery planning and will provide a template for research, monitoring, and evaluation programs for bull trout populations throughout the Columbia River Basin.



Service biologists monitoring Bull Trout population using pit tag technology.

Subbasin Planning (\$1,053K) – Recognizing that success depends upon cooperation and coordination with all stakeholders, the Service was a participant and member of the Willamette/Lower Columbia River and Interior Columbia Basin Technical Recovery Teams for listed salmon and helped to develop the biological goals and technical guidance for recovery plans. The Service participated as a major player in the Northwest Power Conservation Council’s (NWPCC) comprehensive subbasin planning process which helps define habitat actions to improve the survival of listed salmon, bull trout, and other fish and wildlife. Our technical staff brought their scientific expertise to the planning process by providing information and data, reviewing documents, providing comments, and assisting in stakeholder participation to ensure the best available science was applied. At the Statewide and Regional levels, we worked with the States, Tribes, and other Federal agencies to ensure that subbasin planning is proceeding on schedule and policy issues are raised and discussed by the appropriate entities. This work was critical for achieving cooperative recovery of ESA-listed species in the Columbia River Basin.

Instream Flow (\$949K) – The Service coordinated with Federal hydropower operators (e.g. Bonneville Power Administration, COE, and BOR) on flow objectives which served as a guide to manage available water resources during the juvenile and adult migration seasons. Service staff worked with other State and Federal agencies, public utility

districts, Tribes and others to provide technical assistance on 12 hydroelectric re-licensing projects in Washington, Oregon, and Idaho. Technical input addressed flow needs for nine listed aquatic species in the basin, including sturgeon, bull trout, and steelhead. Furthermore, Service staff provided technical assistance to ensure instream flow considerations were incorporated into Habitat Conservation Plans (HCPs) and Basin Plans. HCPs included work in the Walla Walla Basin and Chewuch Basin. The Service coordinated with State, Federal, and local agencies and private landowners to promote instream flows and fish conservation practices in the Lemhi River and Upper Salmon River Basins. These efforts are key to the ongoing development of partnerships and long-term conservation of fish in Idaho and Washington.



Service biologists conducting snorkel surveys.

Partners for Fish and Wildlife Program (\$397K) - The Partners Program provided technical assistance and financial support towards habitat restoration and protection for native fish throughout the Columbia River Basin. Examples of the Service’s accomplishments include: 1) building barriers to exclude livestock and planting vegetation to restore 1.5 miles and approximately 80 acres of riparian habitat along the Salmon River in Lemhi County, Idaho; and 2) removing and replacing 2 existing tidegates with fish passable structures where Warren Slough meets the Columbia River to open up 12 miles of habitat and improve water quality in Clatsop County,

Oregon. The projects completed on private lands contributed toward the off-site mitigation goals of the *Strategy*.



Caspian Tern with juvenile salmonoid.

Avian Predation (\$298K) – The Service provided technical support to the Corp of Engineers (COE) and National Oceanic Atmospheric Administration (NOAA) Fisheries to address management of Caspian terns nesting on COE islands in the estuary. By 2003 those efforts reduced the loss of out-migrating salmon and steelhead smolts to tern predation, salmon smolts consumed by Caspian terns has been reduced by more than 60 percent. The Service also assessed 70 sites throughout Washington, Oregon, California, Idaho, and Nevada to determine the feasibility of enhancing or restoring Caspian Tern nesting habitat at alternative colony sites for some of the terns currently nesting in the Columbia River estuary. In addition, the Service along with the COE and NOAA fisheries is developing an Environmental Impact Statement that addresses long-term management of Caspian terns in the estuary to further reduce predation on out-migrating salmon and steelhead smolts.

Lower Columbia River Restoration (\$179K) – By combining our biological expertise and partnering capability, the Service coordinated with non-Federal land-owners in the lower River to identify and fund four proposals that will improve vital smolt habitat in the estuary. These projects included replacing

three antiquated tidegates (Barrett Slough, Larson Slough & Elliot Slough) with new aluminum fish-friendly tidegates. The new tidegates will help reestablish historic hydrological connections between isolated water bodies in the Youngs Bay Watershed, allowing native juvenile salmonids access to estuarine rearing habitat and improved water quality.



Restoration site on lower Columbia River.

HATCHERIES = \$3,567K

Hatchery Reforms/Fish Health (\$2,513K) – The Service operated, administered and/or funded a major share of the artificial propagation facilities in the Columbia River Basin. These included ten National Fish Hatcheries operated by the Service and funded by other Federal agencies, 24 Lower Snake River Compensation Plan (LSRCP) hatcheries and satellite facilities administered by the Service and operated by the States and Tribes and two National Fish Hatcheries operated and funded by the Service. Furthermore, the Service provided expertise in the areas of fish health, genetics, fish culture, and the ecological inter-actions of fish populations and the legislated authority that was necessary to implement the recovery actions identified in the *Strategy*, BiOps, the NWPC's Artificial Production Review and the *U.S. v. Oregon* settlement. In FY 2003, the Service initiated a variety of hatchery reform measures to ensure the conservation of salmon and steelhead in the Basin. These measures include continued work on the development of Hatchery Genetic Management Plans (HGMP); redesigning and reconstructing a



Service biologist analyzing genetic samples.

hatchery/wild fish separator to reduce mortality; implemented NATURAL rearing by replicating the natural environment in hatchery raceways; and replaced screens to be compliant with ESA requirements at Warm Springs National Fish Hatchery (NFH). In addition, the Service improved fish passage through a hatchery weir and enhanced wild fish health monitoring and evaluation.

Hatchery Monitoring and Evaluation (\$1,054K) – To ensure recovery, the Service monitored and evaluated hatchery and wild salmon and steelhead interactions. The Service mass marked over 1.25 million spring Chinook salmon at Warm Springs and Kooskia NFHs with an adipose fin clip and implanted coded wire tags in all marked fish using automated mass marking equipment to improve tag retention and mark quality. The Service developed new applications for PIT-tag technology and assessed migrations of bull trout and cutthroat trout at eight sites in the Columbia River Basin. The Service also initiated a monitoring and evaluation project to determine if unmarked hatchery steelhead released in unused spawning habitat return to that area and are successful in increasing natural production. In addition, the study will determine the stray rate of these fish and the resulting impacts on listed wild fish.

HYDROPOWER = \$119K

Bull Trout Monitoring and Evaluation (\$119K) – To ensure decisions are based on the best available science and are technically sound and defensible, the Service enhanced support for the Recovery Monitoring and Evaluation Group (RMEG) which is required by the Draft Bull Trout Recovery Plan. It is composed of Federal, State and university experts and is primarily concerned about approaches that are necessary to answer critical questions about bull trout population status and monitoring. RMEG is responsible for guiding monitoring and implementation protocols, techniques, and efforts associated with the implementation of the recovery plan.



Service staff surveying watershed for listed fish species.

HARVEST = \$229K

Limit Harvest Impacts (\$229K) - The Service worked closely with Tribes and other Columbia River harvest managers to evaluate the effects of fishing strategies that benefited listed fish. Service staff also worked closely with other fishery managers to develop and use harvest assessment tools to improve management. Service staff continued to actively engage in Columbia River Basin fisheries management as well as ocean fisheries management that affected Columbia River Basin stocks. The Service participated on the Policy Committee and Technical Advisory Committee for the *U.S. v. Oregon* workgroup, the Salmon Technical Team of the Pacific Fishery Management Council, and the Chinook Technical Committee of the Pacific Salmon Commission to address important fisheries management issues and the objectives of the *Strategy*.



Commercial fishermen.

NEXT STEPS

The Service achieved significant accomplishments in FY 2003 to help restore and recover aquatic species in the Columbia River Basin. These actions were consistent with the Service's obligations outlined in the *Basin-wide Salmon Recovery Strategy (Strategy)*. With increases in FY 2002 and 2003, the Service ramped-up its efforts in the Basin to address salmon, steelhead, bull trout and Kootenai River white sturgeon. The Service's Pacific Region has considerable responsibility to assist in the management, protection, and restoration of the Basin's aquatic resources and to ensure the Federal government meets its Trust responsibilities to Native American Tribes.

For example in FY 2004, the Service will continue to meet its commitments as the lead agency on the recovery of bull trout and Kootenai River white sturgeon.

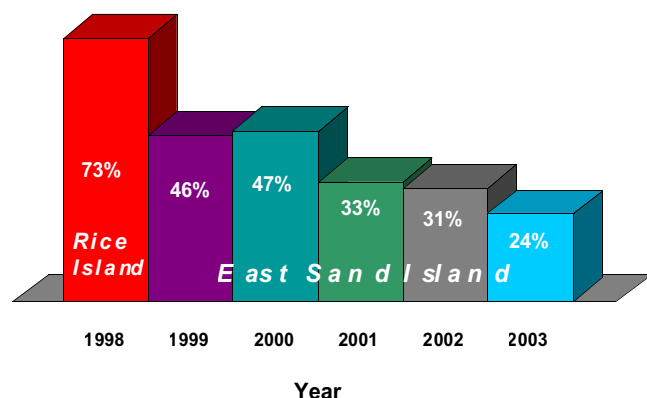
In June 2003, Judge James A. Redden remanded the 2000 BiOp to NOAA Fisheries to resolve several deficiencies including: reliance on federal mitigation actions that have not undergone section 7 consultations under the ESA; and reliance on range-wide off-site non-federal mitigation actions that are not reasonably certain to occur. In a subsequent "minute order," the Judge denied plaintiffs' motion to vacate the BiOp and it will remain in place as deficiencies are addressed. The Service will coordinate with NOAA Fisheries and continue to provide technical support and scientific expertise to assist in policy decisions.

Habitat

I. Avian Predation

DOI Strategic Goal	End Outcome Goal	Amount
Resource Protection	Sustain Biological Communities	\$293K

In 1998, Caspian Terns consumed an estimated 11.2 million salmon smolts in the Columbia River Basin estuary. The Strategy identified predator control or management of tern predation (including developing a management plan) as one of the short term actions to be completed by the Service. Likewise, Reasonable and Prudent Actions (RPAs) 101-104 of the National Oceanic and Atmospheric Administration Fisheries (NOAA Fisheries) FCRPS BiOp require action agencies to consult with the Service to: develop effective means of discouraging avian predation; conduct studies; and evaluate avian predation on juvenile salmonids in the FCRPS. Interim management actions such as the relocation of Columbia River estuary Caspian Terns to East Sand Island in FY 2000 have resulted in a significant and steady decline of tern predation on smolts (Figure 1). By 2003, only an estimated 4.2 million salmon smolts were consumed by terns – over a 60 percent reduction.



Accomplishment: Published “A Review of Caspian Tern Nesting Habitat: A Feasibility Assessment of Management Opportunities in the U.S. Fish and Wildlife Service Pacific Region.”

Caspian Tern Feasibility Assessment – The Service assessed 70 sites dispersed throughout Washington, Oregon, California, Idaho, and Nevada to determine the feasibility of enhancing or restoring Caspian Tern nesting habitat to serve as alternative colony sites for some of the terns currently nesting in the Columbia River estuary. A copy of this document was provided to Federal and State agency policy level decision-makers in February 2003.



Caspian Tern nesting site on Rice Island.

This information will assist in determining appropriate management strategies for further reducing tern predation on listed salmon smolts in the estuary. Site assessments included a review of the physical and biological features, management needs, potential resource conflicts, and associated regulatory requirements. The feasibility assessment was a critical element for developing alternatives to be analyzed in an upcoming Environmental Impact Statement on the long term management of tern predation in the estuary.

Accomplishment: Initiated Environmental Impact Statement (EIS) development process with NOAA Fisheries and Army Corps of Engineers.

Technical Assistance - On April 7, 2003, the Service, in cooperation with NOAA Fisheries and the Army Corps of Engineers, published a Notice of Intent in the Federal Register to prepare an Environmental Impact Statement (EIS) for Caspian Tern management in the Columbia River estuary. The EIS is required by the settlement agreement reached in 2002 (National Audubon Society et al. v. Colonel Randall J. Butler et al.) which also identified the Service as the lead agency on the project. The Federal Register notice solicited public participation in the EIS scoping process. Public scoping meetings were held in Oakland and Arcata, California; Aberdeen and Olympia, Washington; and Astoria and Portland, Oregon. A total of 60 people attended these meetings. Public comments were accepted at meetings, via email, or through the mail. A total of 116 comments were received before the end of the public scoping period, May 22, 2003.

A Service website was developed for this project to keep the public informed during the entire EIS process. In addition, a planning update was released in September 2003, describing the Caspian Tern project and updating the public on the status of the development of the EIS. A draft EIS is anticipated to be released for public comment in July 2004. The settlement agreement requires a Final EIS to be completed by February 2005 with implementation of the selected proposed action by March 2005.

Accomplishment: Funded Caspian Tern Nesting Ecology and Diet Studies in California and Interior Oregon.

Feasibility Studies - The Service funded nesting ecology and diet studies of seven Caspian tern colonies in California (Humboldt and San Francisco bays) and Interior Oregon (Summer and Crump lakes). The objective of the study was to develop a better understanding of Caspian Tern colony status and diet composition at representative colonies in coastal and interior habitats of the Pacific Region. Results from the studies indicate that marine fish, primarily anchovies and herring, were the predominant component of tern diets in coastal California, whereas, tui chubs were most abundantly observed in diets of terns nesting in interior Oregon. Information from the studies will be used in the development of the Caspian Tern EIS described above.

Habitat

II. Bull Trout Fish Passage

DOI Strategic Goal	End Outcome Goal	Amount
Resource Protection Communities	Sustain Biological	\$1,192K

Access to habitat is a key element in the restoration of bull trout in the Columbia River Basin. The *Strategy* identifies fish passage as an immediate action that will benefit bull trout. Below is a list of this year's accomplishments and narratives exemplifying the work progress in FY 2003.

Accomplishment: Provided technical assistance to U.S. Forest Service (USFS) and Bureau of Land Management (BLM) on replacement of 600 culverts in Oregon and Washington to benefit bull trout and anadromous salmonids.

Habitat Restoration - The Service worked on a consultation with the USFS to replace 600 culverts over five years within eastern Oregon and all of Washington. All culverts covered by the consultation currently are fish passage barriers to all fish. Culverts may be removed or replaced with a bridge or a stream simulation culvert so that the channel through the culverts will have natural substrate. Projects include USFS projects and non-Federal projects adjacent to USFS lands which meet the design, engineering and monitoring requirements. This work will address significant recovery goals for bull trout and anadromous salmonids. In addition, the Service worked closely with the Clearwater-Salmon District of the BLM on replacing two culverts on the South Fork Clearwater River. These culverts impeded or completely blocked passage of bull trout, spring/summer Chinook, steelhead, and westslope cutthroat trout during low flows and high spring flows. The installation of "fish friendly" bottomless arches will restore passage to over 12 miles of high quality fish habitat. The Service also provided technical assistance to

the USFS for the Trapper Creek restoration project and removal of a concrete structure to allow bull trout passage on Crystal Creek.

Accomplishment: Assessed both the South Fork Walla Walla and North Fork Umatilla for bull trout populations and assessed Entiat River for freshwater productivity and life history characteristics of wild juvenile spring Chinook in the Entiat River.

Bull Trout Tracking - The Service continued population assessment work for bull trout in the Walla Walla River basin which is focused on fish densities, population demographics and abundance, movement, and habitat quality. In 2003 work was expanded to include the South Fork Umatilla River. The fieldwork requires capturing and marking bull trout which were tagged with both a PIT tag, and a visual Floy anchor tag used for short-term population estimates and tag retention. A total of 502 bull trout were marked in the South Fork Walla Walla River and 81 bull trout in the North Fork Umatilla River which were used to estimate populations of 9,200 and 2,500 bull trout for the two areas, respectively. Two passive detection PIT-tag antennae array systems were fully on line in the South Fork Walla Walla River in 2003. The antennae have provided year-round sampling, which yielded movement and demographic information along with survival and population estimates. Habitat surveys were performed in each of the reaches previously sampled in 2002.

In FY 2003 the Service began a monitoring program to assess the freshwater productivity and life history characteristics of wild juvenile spring Chinook in the Entiat River. This information will be used to compare wild Entiat stock with spring Chinook currently produced at Entiat National Fish Hatchery to provide insight towards the future management of both populations. A rotary screw trap was placed in the Entiat River to obtain samples for genetic comparisons and survival through the hydropower system.



Service biologists implanting monitoring devices.

Accomplishment: Monitored bull trout in Entiat, Mad, Twisp, and Wapatus River in upper Cle Elum River watershed by documenting spawning areas, movements and populations.

Bull Trout Monitoring - The Service captured and implanted radio transmitters in 10 Entiat River and 15 Mad River bull trout to provide crucial life history information to help in the recovery of the species. Current Entiat River bull trout recovery and habitat plans are hampered by lack of data concerning migratory corridors and barriers, spawning locations, identification of critical habitat areas and life history attributes. During fall 2003 tracking, bull trout were observed in association with or on spawning nests in the Entiat and Mad rivers. Most tagged bull trout were observed moving downstream in late October through November. Several bull trout were documented holding for several weeks near the Entiat River confluence prior to moving into the Columbia River. Tagged bull trout were documented moving nearly 100 kilometers from spawning areas in the tributary streams to the Columbia River over the fall period. The Service also continued monitoring locations and movements of bull trout in the Twisp River (Methow River basin). Radio-telemetry information was analyzed on bull trout movements and micro-habitat use during the pre-spawning, spawning, and post-spawning periods in the Twisp River. In addition, the response and survival of fluvial bull trout trapped above a natural seasonal barrier of sub-surface flow in the upper Twisp River was monitored over winter. A report was prepared on fluvial bull trout movements, habitat use and response to isolation and included recommendations on management, research, and outreach actions. The second year of presence/absence surveys were conducted in the Yakima River basin and a report on FY 2002 surveys was completed and distributed to resource agencies. Data collected in FY 2003 in the Wapatus River, the upper Cle Elum River, and other Yakima River basin spawning tributaries improved our knowledge of bull trout stock status and distribution above and below migration barriers and helped fill critical data gaps identified in the draft *Bull Trout Recovery Plan* and by the Washington Department of Fish and Wildlife.

Accomplishment: Conducted a habitat and passage assessment to determine flow needs. Bull trout distribution and movement studies were initiated.



Service staff surveying habitat and distribution of Bull Trout.

Habitat Assessment - We have conducted a detailed assessment of habitat and passage conditions in the Walla Walla River and produced a technical report which included passage flow recommendations for fluvial bull trout migrating to upstream spawning grounds. The report provided a foundation for the 2003 Settlement Agreement between the Service and several irrigation districts. An assessment of rearing habitat for bull trout was also initiated. Surveys were designed to



Rotary screw trap monitors Bull Trout movement habits.

describe seasonal distribution over 18 miles of the mainstem. In addition, rotary screw trapping was implemented to determine seasonal downstream migration and dispersal patterns for bull trout. Habitat mapping was conducted for the stream

segment followed by implementation of snorkel surveys to determine seasonal distribution and relative abundance. Instream flow studies will then be conducted to determine rearing and passage flows based on distribution data. Additional rearing flow targets will also be determined for downstream areas to facilitate expansion of rearing habitat and progress towards recovery. We coordinated with the watershed council, irrigators, and the States on the details of fish passage, bull trout rearing habitat, and instream flow recommendations for the basin.

Accomplishment: Represented FWS on technical fish passage and water quality issues in the mainstem Columbia River Basin by participating in regional forums that address the recovery of listed fish species.

Technical Fish Passage Work - An interagency Regional Forum coordinates implementation of actions required by the biological opinions of the NOAA Fisheries and the Service for operation of the FCRPS. ESA listed bull trout, Kootenai River sturgeon, Snake River snails, and twelve stocks of salmon and steelhead continue to contribute to the complexity of fish passage issues in the Columbia River basin. The listings and associated biological opinions require a constant and ongoing effort to balance the competing needs of the listed species, hydropower production, flood control, navigation, and irrigation. Water quality issues such as temperature, dissolved gas, and TMDLs require continuous activity and technical analysis through the Regional Forum to maintain adequate passage conditions for fish. In addition, significant modeling activity has been conducted to develop alternative management strategies for streamflow and spill to improve passage conditions and survival for anadromous fish.

Habitat

III. Columbia River Restoration

DOI Strategic Goal Resource Protection	End Outcome Goal Improve Health of Watersheds & Landscapes	Amount \$179K
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All anadromous salmon in the Columbia Basin use the lower Columbia River and its estuary as a migratory corridor to move between freshwater and marine habitats. The estuary also contains food sources to support the rapid growth of salmon smolt, and offers a mosaic of habitats particularly important to several salmon life histories. However, changes in the environment and the loss or degradation of important habitat attributes compromise the recovery of these endangered salmon stocks.



Restoration site on lower Columbia River.

The Basinwide Salmon Recovery Strategy (Strategy) discusses the importance of habitat improvements in the estuary, pointing to the role the estuary plays in preparing out-migrating smolts for the ocean phase of their lifecycle. The Strategy states that fixing estuary habitat is a centerpiece of the conceptual recovery plan. In addition to using Service capabilities and authorities to work with non-Federal land owners in the lower River, the Service has expanded existing species restoration efforts below Bonneville Dam.

Accomplishment: Worked with landowners, non-profit organizations, and academic institutions to identify potential habitat restoration activities in the lower Columbia River and its estuary; then provide technical assistance to develop and begin implementation of four projects.

Youngs Bay Watershed Tidegate Improvement Project – The Service, in partnership with the North Coast Watershed Association (NCWA), will replace three antiquated tidegates (Barrett Slough, Larson Slough & Elliot Slough tidegates) with new aluminum fish-friendly tidegates, to re-establish historic hydrological connections between isolated water bodies in the Youngs Bay Watershed. This will allow native juvenile salmonids to access estuarine rearing habitat and improve water quality parameters as tidal exchange increases. The diking of much of this watershed (including the three



Example of dike in Youngs Bay

Sloughs) over the past 140 years has decreased the amount of rearing habitat for juvenile salmonids on the lower Lewis & Clark and Wallooskee Rivers, and converted tidal marshes and swamps into pastureland. By providing project funding to the NCWA, the Service is effectively contributing to the implementation of the Action Plans put forth by six Watershed Councils (the Nicolai-Wickiup, Skipanon, Youngs Bay, Necanum, Ecola Creek, and Upper Nehalem). Replacement of these tidegates is also relevant to the Strategy as it help address the goal to restore 10,000 acres of estuarine habitat.

Blind Slough Restoration - Project awarded by the Service was proposed by the Columbia River Estuary Study Taskforce (CREST), a Council of Governments includes cities, local counties, and port districts surrounding the Columbia River estuary in both Oregon and Washington. Implementing this restoration plan, in collaboration with the U.S. Army Corp of Engineers and Bonneville Power Administration, will enhance 7.5 miles of previously disconnected slough channels to the Columbia River estuary. The overall outcomes are to improve water quality conditions and fish passage opportunities through the breaching of dikes, replacement and/or installation of culverts, installation of water control devices, and channel enhancement in the Saspal Slough, Leino Lane road crossing, and Anderson road crossing sites. The restoration of the Blind Slough builds on the success of locally initiated projects; it supports the habitat improvement goals established in the Strategy, and demonstrates that community based restoration efforts can be implemented collaboratively with Federal project sponsors.

Effectiveness Monitoring Design for Restoration Projects - Awarded to CREST, proposes to apply experimental design principles to provide tools capable of measuring ecological response to restoration treatment in a given area. Effectiveness monitoring in the context of project implementation is valuable to developing an understanding of how ecosystems function, thereby enhancing our ability to predictably restore them in the future. Three objectives will be pursued:

- 1) develop an experimental design template related to restoration (including standardization of data collection for selected ecological parameters);

- 2) collect quantitative data related to water quality, fish use, and other selected parameters from both the reference site and treated conditions; and

- 3) design a series of analysis and dissemination tools to display a profile of water quality, fish population structure, and other ecological parameters that will track changes resulting from planned restoration treatments in the estuary. The proposed work is integral to a burgeoning habitat restoration movement throughout the Columbia River Basin, and has been identified as a high priority for Action Agencies in their implementation of the Strategy and related initiatives.

Salmon Habitat Study - In partnership with Washington State University, the Service will quantitatively assess the effects of hatchery fish on natural fish populations through habitat interactions. These data will provide a baseline assessment of habitat availability and fish habitat preference for a restoration project being conducted on Abernathy Creek. This study attempts to distinguish habitat preferences of wild and hatchery steelhead trout smolts using discriminate function analysis, a need recognized by the Strategy (3.3.10). It also intends to determine the feasibility of a new field technique (mobile PIT (passive integrated transponder) tag detection) to monitor individual fish movement and habitat preferences. This technique may provide a field method for other fisheries biologists, especially those studying endangered or sensitive species, as it is non-invasive and minimizes handling of fish.

As part of these contract agreements, the Service has requested that these projects, and their respective reports, be completed within a year after their start date. The anticipated products will provide crucial information for habitat restoration programs or directly provide fish passage and improve water quality for salmonids in the lower Columbia River. Continued funding through the Coastal Program will foster new partnerships between the Service and local groups, private landowners, Tribes and educational institutions, and improve our ability to bring funding and biological expertise to salmon and steelhead habitat issues in the lower Columbia River and its estuary.

Habitat

IV. Instream Flow

DOI Strategic Goal	End Outcome Goal	Amount
Resource Protection	Sustain Biological Communities	Total=\$949K
	Improve Health of Watersheds & Landscapes	[\$770]
		[\$179]

The Service coordinates with the Action Agencies (Bonneville Power Administration, U.S. Army Corp of Engineers, and Bureau of Reclamation) on flow objective which serves as a guide to manage available water resources during the juvenile and adult migration seasons. The Strategy identifies improvement to instream flows as one of the immediate actions to be taken to achieve the ultimate goal of improved habitat for fish productivity. The main focus for the Service is to establish instream flows that benefit bull trout, Kootenai River white sturgeon, salmon, and other fish and wildlife. Below is a list of its accomplishments in this category as well as a detailed narrative highlighting examples of the work the Service has achieved in FY 2003.

Accomplishment: Provided technical assistance to help partners incorporate instream flow considerations into Habitat Conservation Plans (HCPs) and Basin Plans.

Fish Conservation in the Upper Salmon River Basin - The Service coordinated with State, Federal, and local agencies and private landowners to promote instream flows and fish conservation practices in the Lemhi River and Upper Salmon River Basins. Coordination has been occurring through Enforcement Discretion Agreements and conservation planning under *Section 10 of the Endangered Species Act (ESA)*. These efforts are key to the ongoing development of partnerships and long-term conservation of fish in Idaho and Washington.

Walla Walla Basin Habitat Conservation Plan (HCP) and Comprehensive Irrigation District Management Plans – The Service provided technical expertise and policy guidance to local planning groups for State, county and local governments; Tribes; irrigation districts; and conservation groups to continue development of a Walla Walla HCP. The HCP planning group, headed by Walla Walla County in Washington, received financial assistance from the Service, including an HCP Planning Assistance Grant in 2001, and pass-through funds in 2003. The Service also provided technical assistance in sub-basin planning and in developing Comprehensive Irrigation District Management Plans (a Washington State process). The focus is to provide adequate instream flows for listed bull trout and steelhead. The Service also provided assistance with an ongoing feasibility study sponsored by the Confederated Tribes of the Umatilla, and conducted by the Army Corps of Engineers, which will explore options to increase instream flows through efficiency, storage, or other methods. These cooperative efforts provide an excellent opportunity to work collaboratively to build consensus with local landowners for aquatic resource conservation in the Basin.

Columbia Basin HCPs - The Service provided technical expertise and policy guidance in development of several HCPs in the Columbia Basin which address irrigation, fish passage, and water use issues. The Service coordinated with the Broughton Land Company and the Chewuch Basin Council. Efforts in these watersheds also include habitat restoration projects to improve fish passage and habitat quality.

Accomplishment: Participated with action agencies in implementation of the FCRPS Biological Opinions.

Kootenai Valley Resource Initiative (KVRI) - The Service continued to work closely with the KVRI in Boundary County, Idaho regarding instream flows benefiting Kootenai River burbot, bull trout, and Kootenai River white sturgeon. The KVRI was formed by local city and county governments and the Kootenai Tribe of Idaho, to proactively address natural resource issues in Boundary County. This effort included developing an outreach strategy to help local citizens better understand natural resource issues in the area, and to gain their support for implementing locally-focused, proactive management efforts for Kootenai River burbot and sturgeon, and for bull trout. The KVRI recently completed a draft candidate conservation plan for the burbot, and have joined with the Service and the State of Idaho in requesting low winter flows to promote burbot migration and reproduction.

Accomplishment: Consulted and Coordinated with Power Companies and relicensing projects.

Provided Technical Input related to instream flows, fish passage, and other trust responsibilities -

The Service worked with other State and Federal agencies, public utility districts, Tribes and others to provide technical assistance on 12 FERC hydroelectric relicensing projects in Washington, Oregon, and Idaho. Technical input was provided related to flow needs for listed Snake River mollusks, Snake River sturgeon, Shoshone sculpin, bull trout, westslope cutthroat, mountain white fish, steelhead, Pacific lamprey, and white sturgeon among others. Five projects on the Mid-Snake in Idaho are expected to be licensed in early 2004 with measures incorporated to address instream flow issues.

Mid-Columbia River Projects (Priest Rapids, Wanapum, and Rocky Reach Dams) -

The Service became an active participant in the relicensing of the Priest Rapids, the Wanapum Dam and the Rocky Reach projects in 1999. These hydropower projects are located on the Mid-Columbia River in central Washington. The Service continues to coordinate with NOAA-Fisheries, Washington Department of Fish and Wildlife, American Rivers, and



Hydro-power facility on the Columbia River.

Tribes, in submitting and reviewing proposals on restoration and fish passage in dealing with salmon, steelhead, bull trout, Pacific lamprey, white sturgeon in the Hanford Reach area of the Columbia River.

Lake Chelan Hydroelectric Relicensing -

Key issues of concern for the Service include the establishment of native fish species such as bull trout and westslope cutthroat trout, instream flows, and fish passage. With Service input, fish passage over the Lake Chelan dam is now being considered to accommodate connectivity of fragmented bull trout habitat above and below the dam within close proximity to the Columbia River. With Service input and guidance, all interested stakeholders signed a comprehensive settlement agreement in October 2003 to protect important natural resources within the Lake Chelan project area. The Service will file the final terms and conditions for relicensing of the Lake Chelan facilities to FERC in early 2004.

Negotiating private hydroproject relicensing -

The Service has been working with NOAA Fisheries, the Federal Energy Regulatory Commission (FERC), Confederated Tribes of the Warm Springs, and Portland General Electric Company for the Pelton-Round Butte Hydro Relicensing project (Deschutes River), and other Federal and State agencies, on relicensing and implementing an adaptive fish passage plan. The plan includes the development of self-sustaining populations of anadromous spring-run Chinook salmon, summer-run steelhead, and sockeye salmon upstream of Round Butte dam, and considers access to and through project waters for bull trout, summer-run and fall-run Chinook, Pacific lamprey, redband, and other native species.

The Service also furthered, with partner agencies Oregon Department of Fish and Wildlife, USFS, and NOAA Fisheries, development of a guide on the FERC relicensing process of Carmen-Smith, a three-dam complex on Federal lands in the upper McKenzie River watershed that is scheduled for relicensing. Bull trout and spring chinook passage issues are prominent in this river system. Service staff continued efforts on other private hydroprojects, such as in the Clackamas (Clackamas River), Leeburg-Waltermville (McKenzie River), and Willamette Falls (Willamette River) projects to negotiate modifications to existing instream flow agreements.

The RMEG will be responsible for guiding monitoring and implementation protocols, techniques, and efforts associated with the implementation of the Recovery Plan.

Accomplishment: Implemented Bull Trout Recovery Actions

Umatilla and John Day Rivers – Service staff began assimilating biological and physical data for the Umatilla and John Day River basins in Oregon that will be required to develop plans for stream restoration and instream flow targets to improve conditions for bull trout. Service employees compiled stream gauging data, irrigation diversion inventories, water temperature data, and bull trout spawning and rearing distributions to determine data gaps and identify stream segments where additional studies should be initiated. Funding was also used to develop plans and purchase equipment needed to describe bull trout migrations and movements and conduct instream flow studies.

Science Team established to address bull trout recovery issues – The Service established a Science Team consisting of Service fisheries biologists whose technical expertise supports Service policy and management decisions, ensuring that decisions use the best available science, are technically sound, and legally defensible. In 2003, the Science Team addressed issues concerning the bull trout Distinct Population Segments and the recovery criteria put forth in the draft *Bull Trout Recovery Plan (Recovery Plan)*. In addition, the Science Team oversees the Recovery Monitoring, and Evaluation Group (RMEG) which is called for in the Recovery Plan. This group is primarily concerned about approaches that are necessary to answer critical questions about bull trout population status and needed monitoring efforts.

Habitat

V. ESA Consultation

DOI Strategic Goal	End Outcome Goal	Amount
Resource Use	Energy and Forest Products: Manage or Influence Resource Use to Enhance Public Benefit, Promote Responsible Use, and Ensure Optimal Value Improve Health of Watershed & Landscapes	Total=\$1,700K [\$1,581] [\$119]

The Service provided effective and timely consultation to contribute to the conservation and recovery of ESA listed fish species in the Columbia River Basin. Below is a list of accomplishments and narratives exemplifying the work carried out in Fiscal Year 2003.

Accomplishment: Provided Federal, State and Tribal partners with formal and informal consultations on land management strategies to ensure adverse effects to bull trout (and other ESA listed fish species) was avoided or minimized.

Restored fish passage projects - In FY 2003, the Service provided consultations to the USFS for many aquatic habitat improvement projects, in particular for road construction activities such as culvert replacements. Fish passage restoration projects were completed for numerous Idaho forests (Boise, Payette, and Nez Perce) and the Wallowa Whitman Forest in Oregon. These activities help protect watersheds within these forests that contain important spawning and rearing habitat for listed salmon species, including bull trout. In addition, the Service provided consultations related to bull trout habitat restoration that included:

(1) enhancement of bull trout habitat through hazard tree placement in the Metolius River (12 river miles);

(2) bull trout habitat restoration in the Metolius Basin Vegetation Management project by decommissioning roads within riparian reserves (3.2 miles) and watersheds (41 miles), and closing 21 stream crossings; and

(3) bull trout habitat protection and watershed restoration projects on the Crooked River National Grassland.

Habitat conservation - The Service provided programmatic formal consultations with Washington State Department of Transportation (WSDOT) addressing effects of nine separate WSDOT programs in eastern Washington; consulted with NOAA Fisheries on the Mid-Columbia HCP for bull trout passage in the main stem Columbia River and habitat conservation in associated tributaries; and began early coordination with the Idaho Panhandle National Forests on revision of the Land and Resource Management Plan, which addresses management of approximately 2.5 million acres in northern Idaho, including several bull trout recovery units.

Southwest Idaho Ecogroup Forest Plan - The Service consulted with NOAA Fisheries for revisions of three Forest Plans covering 7.5 million acres in Southwest Idaho. The Service successfully negotiated objectives, standards, and guidelines for the Plans that reduce and avoid effects on bull trout, chinook, and steelhead, and promote their recovery. The Biological Opinion for the Plans was provided in less than 90 days, completed at the end of May 2003.

Programmatic Forest Fuels Reduction Project - The Service is working with the Bureau of Indian Affairs (BIA) on a Programmatic Forest Fuels Reduction program to provide restoration for bull trout, salmon, and steelhead and watershed protection for over 352,000 acres of forest on BIA reservations.

Accomplishment: Provide technical assistance addressing the needs of Kootenai River white sturgeon.

Kootenai River white sturgeon - The Service was actively involved in implementation of reasonable and prudent alternatives for Kootenai River white sturgeon under the December 2000 Jeopardy Biological Opinion (BiOp) on operations of the Federal Columbia River Power System. The Service facilitated and supported the pursuit of an interim implementation of VarQ at Libby Dam, Montana, which included an alternative flood control procedure that will more reliably store water for sturgeon, salmon and bull trout flow augmentation. The U.S. Army Corps of Engineers adopted a revised December 31 storage reservation target for Libby Dam. This is intended to allow the reservoir to refill in low run-off years, and in turn, increase the probability of having augmentation water for sturgeon and other listed species. Consistent with the Services BiOp, funding has been provided for U.S. Geological Survey studies to address changes in sediment transport, and stream morphology within potential sturgeon spawning habitat, and the studies are well underway. The results will guide the Services future efforts to conserve the Kootenai River sturgeon within its habitat. An updated draft sturgeon conservation aquaculture plan was prepared by the Services international Sturgeon Recovery Team, and, based on this plan, stocking targets of fish into the Kootenai River have now been increased to address uncertainties in long-term mortality rates. All of these recommendations are consistent with and based upon the Sturgeon Recovery plan and designated Critical Habitat.

Accomplishment: Provided technical assistance in the investigation into the potential impacts on federally listed bull trout by the operation of six dams and three hydropower plants.

Yakima Irrigation Project (YIP) - The Yakima Basin is located in south central Washington State. The Yakima Irrigation Project provides water for agricultural use to the Yakima Basin, one of the largest irrigated agricultural areas in the country, consisting of over 6,000 square miles. The Service began section 7 consultation on the operations and maintenance of the YIP with the Bureau of

Reclamation (Bureau) in 2000. The YIP includes six dams (Keechelus, Kachess, Cle Elum, Clear Creek, Bumping, and Tieton) and three hydropower plants. Consultation was initiated to determine the effects of the project on bull trout, and the Service continues to work closely with the Bureau to define and analyze those effects. A biological opinion on the YIP is expected to be completed by the Service in Fiscal Year 2004.

Accomplishment: Consulted on bull trout conservation and recovery issues related to the operations of three dams (Anderson Ranch, Arrowrock, and Lucky Peak Dams) within the Boise River Basin.

Boise River Basin - To work towards compliance with the Service's 1998 Biological Opinion for operation of Bureau of Reclamation (BOR) upper Snake River projects, the Service provided assistance to BOR concerning the operation of three of its dams (Anderson Ranch, Arrowrock, and Lucky Peak Dams and Reservoirs) on the Boise River. All of these dams are critically important to conservation and recovery of the bull trout subpopulation there. Critical operational concerns for these projects include overwinter habitat, passage, and access to tributaries. In particular, the Service is closely coordinating with BOR during the replacement of eight low level outlets on the Boise River basin's Arrowrock Dam. During the construction period, the reservoir has been drawn down to zero capacity and large upstream landslides and high flows have created critical water quality conditions. Given that the reservoir is wintering habitat for listed bull trout, the Service is working diligently to minimize the effect to bull trout during the construction period. The proposed completion date for replacement of the outlets is March 2004, with refill beginning shortly thereafter.

Accomplishment: Completed consultations to improve fish habitat and fish passage.

Fish Passage - The Service completed consultation with the Walla Walla District of the U.S. COE on a proposed project to upgrade fish passage at McNary Dam. The Service provided assistance to Bureau of Reclamation (BOR) and BPA in

completing consultations on water leasing projects and watershed restoration projects designed to improve fish habitat and fish passage in the John Day River system.

Accomplishment: Provided expertise and guidance on several projects in the Yakima Basin benefiting federally protected species and their habitat.

Yakima Basin - The Service has also participated in informal consultations related to the BOR activities in the Yakima Basin and provided assistance to the BOR on projects in the Basin such as the Schaatke Land Transfer, a potential wetlands restoration project, and the Ellensburg Town Ditch emergency inspection and repair of a damaged spillway and fish gate. Informal consultations with the Bureau have resulted in retirement of the Wapatox Power Plant on the Yakima River, resulting in the return of approximately 300 cfs to the River, benefiting bull trout, steelhead, and Chinook salmon. Additionally these consultations have contributed to the development of emergency fish-passage at Gold Creek (tributary of Keechelus Lake near the crest of Snoqualmie Pass), and other tributaries in order to facilitate bull trout migration.

Accomplishment: Provided technical assistance to Federal and State agencies on improving water quality.

Water Quality - The Service closely coordinated with NOAA Fisheries to provide technical assistance to the Environmental Protection Agency (EPA), and the Oregon and Idaho Departments of Environmental Quality (DEQ) for approval of the Hell's Canyon TMDL. To achieve water quality standards that are protective of salmon and bull trout habitat, the Oregon and Idaho DEQs developed TMDL to provide for more stringent water quality - based controls.

The Service worked closely with NOAA Fisheries to provide technical assistance and consultation to EPA concerning proposed cleanup and remedial actions associated with the Blackbird Mine. This mine is located within the Salmon River watershed which is a documented stronghold for bull trout, salmon, and steelhead. Decades of mining and

copper contamination had eliminated much of the aquatic community from the Panther Creek drainage.

The Service completed the draft biological opinion for the EPA's approval of Idaho's Water Quality Standards for Numeric Water Quality Criteria for Toxic Pollutants. This draft biological opinion assessed the effects of water quality criteria established for 23 pollutants on 24 listed species and critical habitat within the State of Idaho.

The Service worked with the BPA through informal consultation to provide instream flow enhancement of the Crooked River (2.37 cubic feet per second (cfs) during the 2003 irrigation season), Little Bear Creek (0.88 cfs for 5 years), and Ochoco Creek (1.22 cfs for 2 years). Leasing of water rights augmented instream flow in the 48 river miles below Prineville Reservoir to Lake Billy Chinook and 5 river miles above Prineville Reservoir.

The Service worked with NOAA Fisheries, EPA, and Potlatch Corporation to develop a Biological Opinion (BiOp) addressing potential effects to federally protected species potentially impacted by the mill discharges. Discharges of effluent from the Potlatch Corporation pulp and paper mill - located in Lewiston, Idaho - into the Snake River at its confluence with the Clearwater River have the potential to negatively impact several listed species using these rivers. Federally threatened and endangered species potentially impacted by discharges from Potlatch include bull trout, Snake River Fall and Spring/Summer Chinook, Snake River sockeye salmon, Snake River Basin steelhead, and bald eagles. EPA has proposed the re-issuance of a National Pollution Discharge Elimination System (NPDES) permit for this facility. As the Federal action agency, the EPA prepared a Biological Evaluation to analyze the potential effect of permit issuance on listed species under the jurisdiction of the Service and NOAA Fisheries. There is a court mandated deadline for the Service and NOAA to have their biological opinions completed by March 1, 2004.



Potlatch Pulp and Paper Mill, Lewiston, Idaho.
Photo: Karen Wattenmaker Photography Englewood, CO.

Accomplishment: Provided technical assistance to Washington State Pesticide/ ESA Task Force.

Pesticide/ESA Task Force - The “Task Force” is an interagency technical team and was assembled to provide technical assistance to Washington State regulatory authorities for pesticides, in their request for ESA compliance. The State of Washington requested technical assistance on behalf of the agricultural community to address ESA issues because of concerns regarding listed salmonids, including bull trout, and the potential impacts of currently used pesticides, detected in surface waters, may have on these aquatic resources.

Habitat

VI. Subbasin Planning

DOI Strategic Goal	End Outcome Goal	Amount
Resource Protection	Sustain Biological Communities	\$1,053K

In 2000, the Fish and Wildlife Program was amended to include the development of locally-developed fish and wildlife management plans, called subbasin plans, for the 62 watersheds in the Columbia River Basin. Subbasin plans will identify priorities to protect, mitigate, and enhance fish and wildlife resources in the Columbia Basin. Subbasin plans will include an inventory of past and ongoing activities and a technical assessment of the limiting factors to the natural production of Pacific salmon and steelhead. State, Tribal, and Federal planning efforts will be integrated into these plans.

We are participating in subbasin planning throughout the Columbia Basin. Our technical staff brings additional scientific value to the planning process by providing site-specific information, technical knowledge, on-the-ground expertise, and by assisting in stakeholder participation and outreach. At the State-wide and regional levels, we are working with the States, Tribes, and other Federal agencies to ensure that policy issues are addressed. Subbasin plans are expected to be completed in May 2004.

Accomplishment: Established collaborative relationships with Federal, State, Tribal partners and multiple stakeholders (local level) engaged in the development of subbasin plans.

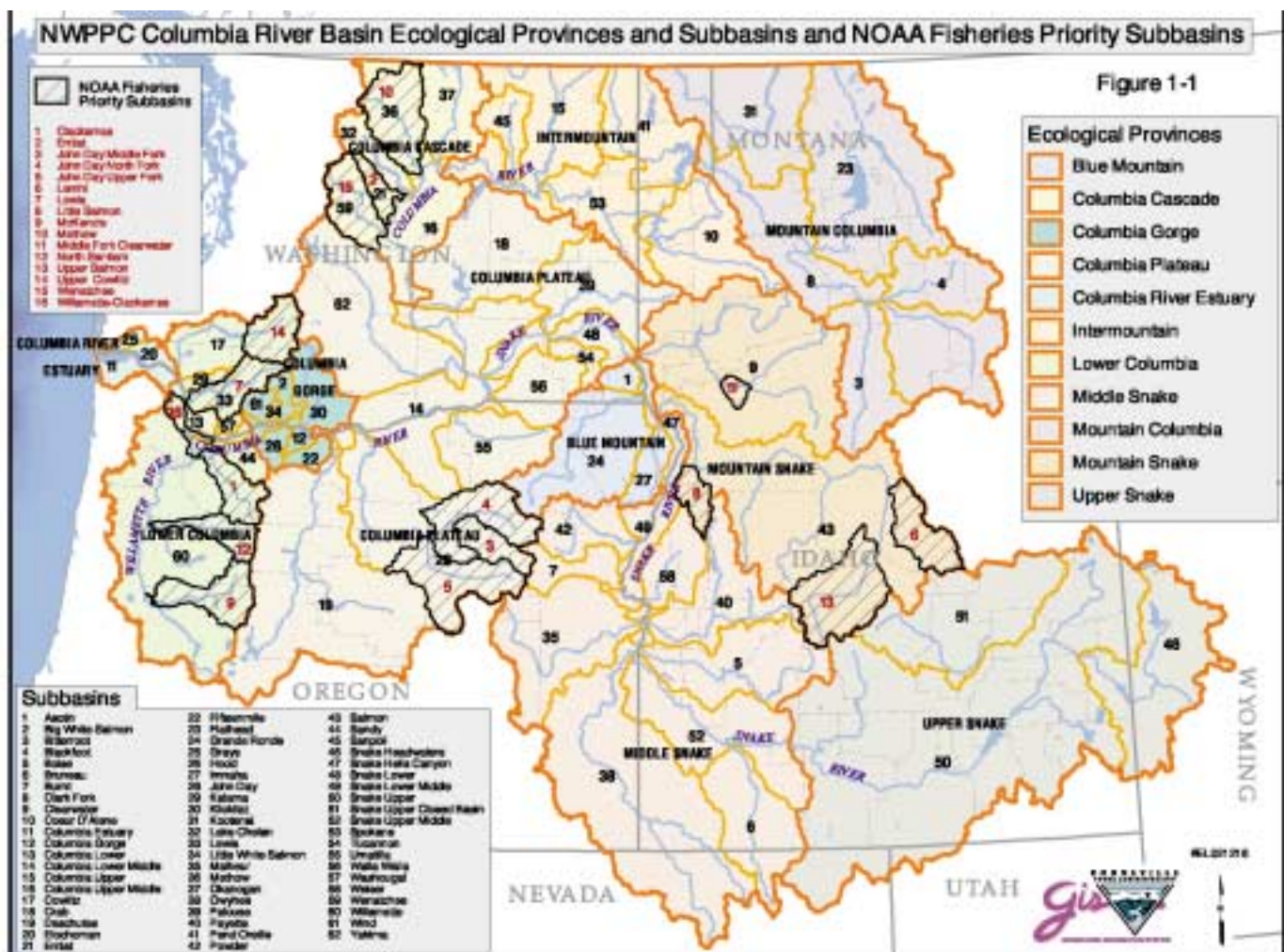
Partnerships - The Oregon Subbasin Planning Coordinating Group is composed of State, Tribal, and Federal agencies responsible for setting policy, scheduling, and managing subbasin planning in all subbasins in Oregon. The Service is actively participating in the Oregon Coordinating Group. From this State-level scale we assist in resolving difficulties and delays experienced by specific subbasin planning groups, and assist local entities and the public with technical issues and policy interpretation.

Accomplishment: Provided technical assistance in 21 subbasins planning units to assist in the implementation of the bull trout recovery plan and to improve bull trout passage and habitat.

Technical Assistance - We are actively participating in multiple subbasin planning efforts, covering a wide geographic area in eastern Washington and northern Idaho. We are providing technical assistance and strategic guidance to help incorporate other planning processes such as the draft *Bull Trout Recovery Plan* and the State of Washington's "Draft State-wide Strategy to Recover Salmon."

We have participated in the Wenatchee Subbasin planning process by serving on the habitat subcommittee sponsored by the Chelan County Public Utility District Watershed Planning group. While working on this planning team, we have provided comments and information on bull trout biology, fish passage restoration opportunities, data collection projects, and areas of concern that are expected to be incorporated into the final planning document(s). We are actively involved in consultation on the Yakima Subbasin Plan (YSBP). While participating on the aquatics technical committee, our staff has been working to ensure consistency between

the YSBP and bull trout recovery planning. We are keeping committee members update on the draft Bull Trout Recovery Plan as it evolves from draft to final version. Our technical staff has also been working with the Intermountain Province (IMP) technical team, and with advisory groups in subbasin planning efforts in the Asotin, Tucannon, Walla Walla, Pend Oreille, Coeur d'Alene, Upper Columbia, Spokane, Lake Rufus Woods, and Kootenai subbasins. We have also contacted subbasin planners for those subbasins where we are not actively participating to ensure they understand our technical assistance capabilities are available upon request.



In addition, the Service has been involved in subbasin planning throughout the Columbia Cascade province including the Wenatchee and Entiat Watershed Planning Units. We have also participated on the Yakima, Wenatchee, Okanogan, Entiat, Methow, and Okanogan Subbasin Planning Habitat Work Groups and Core Teams.

We have the lead for bull trout and westslope cutthroat trout recovery issues as they relate to subbasin planning. We are responsible for ensuring the consistency of the subbasin plan with the draft Bull Trout Recovery Plan.

The Service participated in these activities in support of subbasin planning and has provided guidance on a State and regional level regarding restoration activities and priorities. Implementation of restoration projects supports subbasin planning as well as recovery efforts for Pacific salmon, steelhead, and bull trout.

Accomplishment: Participated in the Interior Columbia Basin and Lower Columbia/Willamette Technical Recovery Teams.

Technical Recovery Team (TRT) - This project will provide information and analysis required by NOAA Fisheries to develop recovery plans for listed salmon in the interior and lower Columbia River. NOAA Fisheries has organized salmon recovery planning efforts into a series of discrete geographic areas. Service staff provided technical expertise to the Interior and Lower Columbia/Willamette (LCW) Technical Recovery Teams in the following areas:

- 1) population identification;
- 2) delisting criteria;
- 3) habitat/fish productivity relationships;
- 4) salmon limiting factor analysis;
- 5) hatchery evaluations; and
- 6) monitoring and evaluation design.

The Service provided technical expertise to assist NOAA Fisheries in the recovery planning process for addressing the above issues. The goal is to develop a sound recovery plan for Columbia River listed salmon. The Service participated in final population identification for Chinook salmon and steelhead in the Interior and a final Viability Report for populations in the LCW. The information generated in the TRT's will be combined with the subbasin plans to form the basis for a future Pacific salmon recovery plan for the Columbia River Basin.

Habitat

VII. Partners for Fish and Wildlife

DOI Strategic Goal	End Outcome Goal	Amount
Resource Protection	Improve Health of Watersheds & Landscapes	\$397K

The Pacific Northwest Salmon Initiative is a multi-program effort designed to carry out the Service's requirements for implementing the Reasonable and Prudent Alternatives for several biological opinions in the Columbia River Basin to address declining species such as bull trout, Kootenai white sturgeon, 12 salmon and steelhead populations, and others. The resources provided under this initiative are used to implement a broad range of activities, including instream flows, estuary protection and restoration, passage and habitat for bull trout, evaluation of hatchery reform plans, and completion of Section 7 consultations on many federal actions. These activities are implemented in partnership with the States, other Federal agencies, the Tribes, and other stakeholders in the Columbia River Basin. In Fiscal Year 2003, a total of \$397,000 was directed towards restoration activities to improve habitat and passage for salmon and bull trout. Below is a list of example of the type of projects that achieved this goal.

Improved 1.5 miles of riparian habitat for listed salmonids in Lemhi County, Idaho.

The total project area covers approximately 80 acres. The area is currently degraded due to livestock use and invasive vegetation. A 20-acre riparian buffer will be established by fencing to exclude livestock use and the remaining 60 acres will be re-established to native vegetation concurrent with invasive vegetation control. Partner's funds will be spent on fencing and vegetation plantings. Biological benefits include improved native riparian habitat for fish and migratory birds.

Economic benefits to the landowner would be improvement in the property due to control of invasive vegetation and control of livestock use. Social benefits would be a positive example of collaborative partnership between federal agencies and a private landowner. Lemhi County is very supportive of these types of partnerships and a variety of similar projects have been implemented over the past 10 years.

Opened up 12 miles of slough habitat in Clatsop County, Oregon.

Restoration activities include removal and replacement of 2 existing tidegates with fish passable tidegates where Warren Slough meets the Columbia River. Fish passage on Warren Slough will be improved by removal of a fish barrier. A water quality measurement device will be used to collect data on water quality improvements (temperature, salinity and dissolved oxygen). Open up 12 miles of slough habitat and improved water quality for federally listed Chinook, coho, and steelhead trout, as well as species of concern, sea-run cutthroat trout. Water quality data regarding tidegate replacements will be collected and shared with the Service for future management decisions. Enhance 100 acres of seasonal wetland habitat for migratory birds.

Restored 2,500 feet of riparian habitat on the Lewis and Clark River in Clatsop County, Oregon.

Habitat improvements will benefit native anadromous fish, including winter steelhead, coastal cutthroat trout, and chum salmon by improving water temperature through shading and sediment control. Native local genotype conifers are being eliminated by industrial forest practices along the Oregon coast that replant logged areas using stock from Canada. This project will salvage and plant wilding sitka spruce, preserving native local stocks on the landscape. The project will also improve habitat for riparian dependent migratory birds and other riparian dependent species in the Lewis and Clark River valley, an important migration corridor for neotropical passerine songbirds.

Restored 6,000 feet of channel on the Saspal & Blind Slough in Clatsop County, Oregon.

Benefits to listed species, FWS trust species or species of concern, and to migratory birds, economic-good dollar for dollar match, or good price per acre for project, and documented need for restoration, i.e. state or federally listed for water quality deficiencies, agency documentation of restoration need, unique or important population. Restoration activities include restoring a historic channel between Saspal and Blind sloughs. Riparian areas along 1,000 foot of new channel, 5,000 feet of existing channel, and another 45,000 square feet of slough habitat will have a minimum 10 foot buffer of invasive plant species removed, native vegetation planted and cattle fenced from these areas. Monitoring of the water quality at the project site will be conducted for 5 years post project implementation.

Provided 10 miles habitat to fish on Cedar Creek in Ione, Washington.

The Ione Municipal Dam on Cedar Creek was removed and the stream channel restored within the dam pool. Non-native fish below the dam have been removed, the sediment behind the dam was also excavated and removed. Removal of the dam restored fish passage to 10 miles of high quality spawning and rearing habitat for bull trout and other native fish. This project was identified as priority action in the draft Bull Trout Recovery Plan. The total project cost (including Federal and non-Federal funds) is over \$700,000, which will be spent locally by the town to hire construction workers, providing an economic boon to a struggling local economy. There is strong community support for this project both within the town of Ione and within the county. The project was selected for funding by a local watershed committee and they have continued to support the project through a lengthy grant application process to obtain all the necessary funding.

Restored 1.5 miles of fish habitat at Hellroaring Creek in Bonner County, Idaho

A six foot high weir was removed and the stream channel restored to provide fish passage. Removal of the weir restored fish passage to 1.5 miles of spawning and rearing habitat for bull trout and other native fish. The project was supported by the Pack River Watershed Council made up of local landowners and by the Pack River Technical Advisory Committee made up of Tribes, State and Federal Agencies and local non-profit groups working in the watershed.

Restored 10 miles of fish passage and habitat conditions for steelhead (threatened) and resident redband trout (species of concern) at Pine Creek in Wheeler County, Oregon.

Fish passage restoration includes removal of a culvert that has been documented by Oregon Department of Fish and Wildlife as a problem to fish passage. A culvert was replaced. Rock weirs and large woody debris was also added to stabilize the grade and provide instream habitat complexity at the project site. This project achieved unimpeded access to 10 miles of spawning and rearing habitat and improved habitat conditions for ESA listed summer steelhead, Service species of concern redband trout, and other resident native species.

Coordinated the restoration of 3,300 acres of upland habitat in the Upper South Fork River of Grant County, Oregon.

This project is part of a coordinated ridge-top to ridge-top habitat conservation approach. In a tiered approach, dependant on habitat importance and funding, this project will restore the entire Upper South Fork of the John Day Watershed. In FY 2003, the Service's contribution to this project was focused on private lands and encompassed the removal and thinning of juniper stands in areas of overgrowth. Juniper woodlands are a major grass and shrubland invader due to changing management and fire suppression practices. Sparse stands of old-growth juniper provide valuable wildlife habitat, but dense stands have negative impacts. Project objectives are to restore properly functioning watershed and channel conditions in headwater streams for the benefit of fish habitat and watershed health in the Upper South Fork John Day River. Activities include: (1) site-specific noxious weed treatments, (2) removal of conifers and junipers from aspen stands, (3) placement of large wood into stream channels, (4) repair of head cuts, (5) stabilize a down cutting stream bank, (6) juniper thinning to release water for late season flows. This project will increase wildlife habitat suitability and improve species diversity from native grass species to fish and wildlife species by: increased

nutrient and water availability; increased soil infiltration; greater plant species richness and diversity; increased under-story plant cover; decreased soil temperatures; decreased overland erosion.

Hydropower

VIII. Bull Trout Monitoring and Evaluation

DOI Strategic Goal	End Outcome Goal	Amount
NMFS FCRPS	Resource Use Energy: Enhance Public Benefit, Promote Responsible Use, & Ensure Optimal Value	\$119K

The Service faces numerous bull trout policy and management decisions. These decisions need to be based on the best available science so that they are technically sound and defensible. Thus, a Science Team was established to support the Service in this capacity. The Science Team oversees the Recovery Monitoring and Evaluation Group (RMEG), which is called for in the draft Bull Trout Recovery Plan (Recovery Plan). This group is primarily concerned about approaches that are necessary to answer critical questions about bull trout populations status and monitoring. The RMEG is responsible for guiding monitoring and implementation protocols and techniques and efforts associated with the implementation of the Recovery Plan.

The Groups first formal meeting was in the fall of 2003. A charter, which included the mission, purpose, process, and products was created to guide the activities of the RMEG. The specific mission of the RMEG was characterized as ‘to maximize the amount of information from existing studies that is useful to bull trout recovery planning as well as to direct and prioritize future monitoring efforts associated with bull trout recovery implementation.’ A 2004 Annual Plan was developed to address specific monitoring and evaluation questions that the group is charged with answering. The primary questions that have been developed are:

- 1) What are the target populations of interest;
- 2) Relative to the recovery criteria of distribution, abundance and trends in abundance, a) what needs to be measured, b) at what life stage, c) how can it be measured, d) what existing data are applicable, e) where has this type of monitoring been done well and, f) what type of data can be used as surrogates;
- 3) How do we determine and measure connectivity between population units;
- 4) How can the information be synthesized and analyzed to evaluate recovery unit and Distinct Population Segment designations and;
- 5) How do we develop an integrated sampling frame at reasonable cost?

Since the first meeting, RMEG members have begun to synthesize information for the March 2004 workshop.

Hatcheries

IX. Hatchery Reform

DOI Strategic Goal Resource Protection	End Outcome Goal Sustain Biological Communities	Amount \$2,513K
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Accomplishment: Initiated development of Phase II HGMPs and CHMPs for Warm Springs and Kooskia National Fish Hatcheries.

One of the founding principles of the *Strategy* is to manage hatcheries so that impacts on wild populations are minimized. In addition, where appropriate, hatcheries are to be used as a safety net ensuring the conservation and preservation of rapidly declining salmon populations. In order to successfully achieve these goals the Service was tasked with implementing several actions that include: developing Hatchery and Genetic Management Plans (HGMPs), reforming production operations and facilities, bolstering applied research in genetics, and increasing monitoring and evaluation efforts. These actions will improve the efficacy of hatchery management practices, increase fish survival and hatchery returns at production facilities, and minimize impacts on listed fish populations.

The Service is working with NOAA Fisheries and our co-managers to develop a conservation management approach for Columbia River hatcheries. This includes development of Phase I, and Phase II Hatchery and Genetic Management Plans (HGMPs) for all hatchery programs as a consultation mechanism to evaluate risks and benefits to listed species. Performance standards will be developed for each specific hatchery program. Service facilities reimbursed

by NOAA Fisheries or other non-Service programs will share the cost of developing HGMPs. The Service is also developing Comprehensive Hatchery Management Plans (CHMP) for all National Fish Hatcheries (NFHs) in the Pacific Region, including Warm Springs and Kooskia NFHs. Together, these plans will integrate Service objectives and priorities with those of our co-managers and public to provide a foundation for hatchery reform and review.

The Service conducted public meetings with our partners to identify changes in hatchery programs and operational reforms that will contribute to the recovery of listed salmon and steelhead stocks or reduce impacts of hatchery production on wild populations. Input from States, Tribes other Federal agencies and interested parties will be used to develop



New intake system at Warm Springs NFH.

Phase II HGMPs for the Warm Springs and Kooskia NFHs. The Phase II HGMPs will be completed in FY 2004 and will lead to the development of comprehensive, geographic Phase III HGMPs. Completion of the Phase III HGMPs is scheduled to be initiated in following the completion of all Phase II plans in FY 2004. The CHMP and the Phase I HGMP that basically describes the current program are the primary documents that will be used to initiate the hatchery reform process in Phase II in FY 2004.

Hatchery Reform Measures

Accomplishment: Designed and initiated construction of new intake screens to replace existing screens that are non-compliant with ESA at Warm Springs NFH.

Screen Replacement - The Warm Springs NFH was authorized by Congress in 1966 to reverse the decline of salmon and steelhead in the Deschutes River system. Historically, these salmonids were a major part of the diet of native people living in the Deschutes basin, and these salmon and steelhead continue to be important to the people of the Warm Springs Reservation today. Due to the hatchery's location on the Warm Springs River, a tributary of the Deschutes River, it can affect both upstream migration of adults and downstream migration of juveniles. The hatcheries intake structure was designed and constructed prior to current standards and therefore does not meet screening criteria established by the National Marine Fisheries Service for salmon and steelhead under the ESA. It is not uncommon to observe both live and dead non-hatchery juvenile fish in the hatchery ponds that have made their way through the existing screens. Of primary concern are ESA listed bull trout and steelhead which may become entrained into the hatchery system. This project redesigned and initiated the rebuilding of the water intake structure of the

hatchery and brought it into compliance with the Endangered Species Act, thereby eliminating impacts to those species listed in the Deschutes River basin. Newly designed screens will meet the specifications included in the Terms and Conditions of the 1998 NOAA Fisheries Biological Opinion for artificial propagation in the Columbia River.

Accomplishment: Designed oxygen injection system for the adult spring Chinook holding ponds at Warm Springs NFH



Oxygen injection system at Warm Springs NFH

Fish Mortality - Warm Springs NFH has had chronic problems with high mortality of adult spring Chinook held in the adult holding ponds due to low dissolved oxygen. The hatchery has limited but adequate facilities for holding broodstock, however low dissolved oxygen in the ponds are a major problem. It is currently necessary to chill and sterilize the water by ultraviolet light prior to use by the fish, which lowers the dissolved oxygen levels to a point that it leads to poor health. The designed oxygen injection system will increase the oxygen level of the water in the adult holding ponds. Similar systems have been used at many facilities with great success. Survival rates of adult spring Chinook are expected to increase up to 90%, ensuring hatchery and restoration needs will be met in the Warm Springs and Deschutes River basins.

Accomplishment: Redesigned and reconstructed Hatchery / Wild fish separator at Warm Springs NFH was to increase percentage of wild return volitionally passed. Monitoring and evaluation plans were also developed and implemented for the modified fish passage structure.

Fish Passage - This project improved wild fish passage at Warm Springs NFH by using automated fish tag detection and video recording technology to promote rapid automatic separation of hatchery origin fish from those of natural origin as they pass the hatchery barrier weir. Spawning ground counts upstream of the hatchery indicate that handling stress at the hatchery can increase pre-spawning mortality of upstream bound fish. Handling wild of fish handled may result in mortality being elevated by 300%. This system automatically traps hatchery origin fish by detecting their coded wire tags and allows untagged natural fish to proceed without the stressors of anesthetization and hand sorting. The system records passage of the untagged natural fish on video tape that can be read to provide accurate counts of all species passed. The system operation is a requirement of the Warm Springs NFH operating plan under the Services and Confederated Tribes of the Warm Springs Reservation of Oregon Memorandum of Agreement. ESA listed steelhead and bull trout as well as natural populations of spring Chinook salmon will benefit from this effort. Evaluation is a cooperative effort of the Service and the Warm Springs Tribes and addresses adult mortality from fish jumping from the passage corridor; estimating wild fish passage; and estimating unintentional passage of hatchery adults upstream. Warm Springs NFH made the physical improvements to the system and the Service has developed and will implement the monitoring and evaluation plans.

Accomplishment: Installed natural color surfaces in rearing units at Warm Springs NFH to simulate natural rearing substrate. In addition a plan was developed to monitor and evaluate the benefits of rearing hatchery fish in raceways with a simulated natural substrate.



Experimental raceways at Warm Springs NFH.

NATURAL Rearing - This project modified twenty hatchery raceways at the Warm Springs NFH to provide a simulated natural substrate for a rearing environment. Rearing of fish in these raceways is intended to maintain characteristics of the native stock in both the hatchery and stream environment. Although visual observations indicate that hatchery fish reared over a simulated natural substrate are less stressed, develop a more natural pigmentation, and more fully utilize rearing space, such benefits are not fully understood. Monitoring and evaluation of this NATURAL project is planned to determine the levels of benefits of the use of simulated substrates in the artificial propagation of spring Chinook. We will monitor juvenile fish in treatments, control groups, and streams to assess and compare performance. We will measure performance including: growth, survival, swimming ability, cryptic coloration, predator avoidance, foraging behavior, habitat utilization, and fish health. Results of the study will allow managers to determine the

value of this particular NATURAL technology; how the technology may be applied to reduce impacts to wild populations; and what production levels will meet the goals and objectives of the hatchery. The Service will monitor and evaluate the success of this NATURAL rearing project.

Accomplishment(s): Modified Kooskia NFH's fish weir and its operation on Clear Creek to increase the efficiency of weir operations, allowing the passage of ESA listed fish populations and to optimize broodstock collections for the hatchery.



Weir modification at Kooski NFH.

Weir Modifications - The weir and its operations were manipulated as follows:

- 1) The opening of the weir panels were experimented with. The panels of the weir were modified to provide two inch openings that allow smaller fish to be able to pass through the weir while preventing the passage of larger fish. The larger broodstock fish below the trap were directed into a fish trap. The two inch openings also allow smaller debris on the back side of the panels to slide through instead of building up and impinging out migrating fish.
- 2) On one panel every other picket, one foot from the bottom, was removed

allowing a two inch gap instead of a one inch gap.

- 3) The bypass channel was experimented with to see if it would allow smaller migrating fish an alternative route around the weir.

The Service's Section 7 Biological Opinion for the Kooskia NFH concluded that the construction and operation of the Clear Creek fish, may adversely affect, but is not likely to jeopardize, the continued existence of the Columbia Basin Distinct Population Segment of bull trout. The Incidental Take Statement of the BiOp authorized the take of adult and sub-adult migrating bull trout resulting from the construction and operation of the weir. Information collected as a result of this study will:

- 1) determine the timing and frequency of ESA listed fish encounters; and
- 2) provide for an operations plan that will minimize the incidental take of ESA listed species, and optimize broodstock collection for the hatchery.

In the NOAA Fisheries BiOp on Artificial Propagation in the Columbia River Basin, operation of weirs for the collection of broodstock is listed as one potential effect on listed species. In the Incidental Take Statement, NOAA Fisheries lists two specific Reasonable and Prudent Measures (RPMs) for agencies operating artificial production programs: monitoring and evaluating their programs, and reducing potential negative impacts to listed chinook and steelhead. This study was also consistent with RPMs 1 (Evaluate practices to provide bull trout passage) and 2 (Document bull trout observations), in the 1999 BiOp for Operation of the Lower Snake River Compensation Plan. Additionally it addresses a term and condition under the Service's 1998 Biological Opinion on the construction and operation of the Kooskia NFH weir.

Accomplishment(s): Upgraded water chiller to a larger capacity, more efficient chiller, thereby better situating Kooskia NFH for potential hatchery reform measures.



Water chiller at Warm Springs NFH.

Water Quality - Currently Kooskia NFH water sources are two ground wells and surface flow from Clear Creek. However, Clear Creek is not a reliable water source during summer months due to decreased water quantity and quality. Therefore, Kooskia NFH depends entirely on well water and the hatchery water recycling system during these months. To accommodate the loss of Clear Creek water, well water is pumped and chilled to reach the proper rearing temperature. The present chiller is over 30 years old, set up off-line, and must be operated at maximum capacity to cool the existing water amount. Ultimately, an alternative water source must be developed. In the interim, however, improvement of the current water system is necessary. In addition, a new water source along with a larger capacity and more efficient chiller will allow Kooskia NFH to initiate further hatchery reform measures (ie. Implementing NATURAL rearing through emulating natural rearing temperatures). A new chiller will also reduce annual operating costs by reducing energy consumption.

Accomplishment(s): Installed pond covers and a bird exclosure at Kooskia NFH to reduce solar radiation and disease transfer between the hatchery and the natural environment.



Raceway covers at Warm Springs NFH.

Quality Production - Pond covers for six existing Burrows ponds will reduce solar radiation, and as designed, will exclude predatory birds. The covers will assist in decreasing summer water temperatures thereby reducing incidence of disease and the exclosure will eliminate the transfer of disease between ponds and the natural environment by birds. Additionally, the reduction of disease at Kooskia will reduce the potential for transfer of disease to ESA listed bull trout, salmon and steelhead in the Clear Creek and Clearwater River migration corridor.

Accomplishment: Initiated implementation of a monitoring and evaluation plan by installing a PIT tag detection device and conducting activities to determine the physical effects of screening.

Hatchery/Wild Interaction - Several marked experimental groups of hatchery summer steelhead were released into the water intake system at Kooskia NFH and were collected at the outflow using a fyke net. Experimental

fish were examined before and after passing through the system in order to determine the physical effects of screening on listed steelhead and bull trout. No direct or delayed mortalities were observed, and minor skin abrasion was observed on only 6% of the fish. It was concluded that the water intake and screening process at Kooksia NFH does not have any significant physical effects on fish that pass through the system.

Fish Health

Accomplishment: Tested 60 wild salmon and steelhead/rainbow trout collected in areas that would be influenced by Leavenworth NFH. 40 fish have been collected and tested from areas above the hatchery.

Wild Fish Health Survey - Pathogen testing follows the rigorous standards of the Service National Wild Fish Health Survey Protocols, and results will be entered into the National Wild Fish Health Database. This is the first year of this study. Final analysis and evaluation of the project are pending due to multiple year data sets that are required for this project to have the sufficient statistical power to give scientifically valid results.

The survey is being implemented to provide an understanding of disease interactions between wild and hatchery fish. Fishery managers do not fully understand the mechanisms or effects of the transfer of pathogens between populations of wild and hatchery fish. Without such knowledge, managers can not make valid informed decisions on wild fish and habitat restoration efforts within the Wenatchee River or Icicle Creek drainages. Wild fish survival is dependent on levels of pathogens within populations in the river and management does not know what impacts Leavenworth NFH may be causing or what impacts wild fish may cause to the hatchery.

Accomplishment: Acquired the capability to analyze DNA samples to detect disease and ascertained disease levels in infected fish.

Hatchery Fish Health - In the Columbia River Basin, bacterial kidney disease (BKD) kills thousands of salmon every year, resulting in expensive efforts to reduce this disease. A new DNA technology called quantitative polymerase chain reaction (QPCR) can detect very low levels of disease in eggs, water and young fish, something not possible by standard methodologies. The QPCR technology is used by the Service to help detect routes of disease, allowing hatcheries to improve or modify fish culture practices. For instance, the Warm Springs NFH maintains the genetics and environmental integrity of the native wild salmon by identifying their hatchery fish with a tiny snout tag. The insertion of this snout tag may inadvertently cause localized infections of BKD which can be detected by QPCR. Should this be the case, it could result in changing tagging procedures which may, in turn, allow a reduction in the use of erythromycin, a drug currently being used to prevent BKD. Drug use is a concern to the Confederated Tribes of the Warm Springs Reservation who help manage the hatchery. In FY 2003, a study compared the standard but less sensitive methodologies to the new DNA (QPCR) methodology to assess disease levels in sick fish. This study verifies the credibility of this new procedure for use by the Service and State agencies for detection of disease.



Salmonoid sample infected with bacterial kidney disease.

Hatcheries

X. Hatchery Monitoring and Evaluation

DOI Strategic Goal Resource Protection	End Outcome Goal Sustain Biological Communities	Amount \$1,054K
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Accomplishment: Outplanted adult spring Chinook salmon that were tagged and genetically sampled to monitor and evaluate the ability of hatchery-origin salmon to spawn naturally and contribute to the restoration and recovery of wild populations .

Repopulation Study - There is a lack of evidence regarding the ability of hatchery-origin salmon to spawn naturally and contribute to the restoration and recovery of wild populations. From 2001 to 2003, adult spring Chinook salmon of hatchery origin were released into Peshastin Creek. There had been no wild spring Chinook salmon in this creek in since 1997. These outplants of adult hatchery salmon provide an opportunity to assess the ability of naturally spawning hatchery fish to rebuild a wild population. The results of initial the monitoring and evaluation efforts confirmed that the hatchery salmon were successful in spawning and building a significant number of redds. Snorkeling surveys in 2002 and 2003 indicate that these redds were successful in producing juveniles but the quantity and long-term viability are still unknown.

A rotary screw trap was purchased, the study site was selected, and most project permits were secured in FY 2003. Operations of the trap and data collection was scheduled to start



Rotary screw trap in Peshastin Creek, Washington.

early in FY 2004. Quantitative trapping technology will be used to estimate population parameters, morphometrics, and genetic composition of natural produced juveniles of hatchery parentage with hatchery-reared cohorts.

Accomplishment: Operated a juvenile salmonid trap throughout the year to document abundance, life history, survival and travel time data for ESA-listed and non-listed salmon and steelhead.

Population Assessment - The Service began a juvenile salmonid monitoring program this year in an effort to assist the recovery of ESA listed spring Chinook salmon, steelhead and bull trout inhabiting the Entiat River Basin by gathering currently unknown information about the juvenile life history characteristics of these

species in this basin. A rotary screw trap was placed into operation in the Entiat River and fished nearly continuously throughout the year and will continue until early-December 2003. This project has been highly successful in capturing a significant number and variety of species. Population and life history information on ESA listed and non-listed fish is being continually collected. A portion of the emigrating spring Chinook were pit-tagged, generating travel time and survival estimates through the Columbia River corridor. Tissue has been collected from Chinook and steelhead juveniles to conduct future genetic analysis. Some captured salmonids have been utilized to construct pathological profiles as part of the National Wild Fish Health Survey. Data collected this past year will be furthered compared to assess any potential impacts between hatchery versus the wild populations.

Accomplishment: Mass marked 464,552 spring Chinook salmon at Warm Springs NFH with an adipose fin clip and implanted coded wire tags in all marked fish using automated mass marking equipment to improve tag retention and mark quality.

Mass Marking - Marking with an adipose fin clip and tagging with coded wire tags of 100% of the Warm Springs NFH production of spring Chinook salmon provided important information for hatchery evaluation, harvest management, stock assessment, and broodstock management of wild and hatchery fish as required by co-managers in the Deschutes and Columbia Rivers. This marking program at Warm Springs NFH is considered a pivotal instrument in the management of wild and hatchery fish. The Warm Springs Tribe coordinates with the Service on this project, however, the Service has the lead for the monitoring and assessment of the tagging and release program.

Accomplishment: Established cooperative agreements implemented a hatchery/wild fish interaction study. Results of the study will be used in management decisions at National Fish Hatcheries to minimize the risk to wild and listed fish and help hatchery reform.

Partnership - The Service worked closely together with the Confederated Tribes of the Warm Springs Reservation of Oregon, the U.S. Geological Survey (USGS), and Oregon Department of Fish and Wildlife (ODFW) to implement the hatchery/wild interactions study. The purpose of the study is to investigate ecological interactions between hatchery spring Chinook salmon released from the WSNFH and native fishes, including listed salmon, steelhead, and bull trout in the Deschutes and Columbia Rivers.

Cooperative agreements were established with the Warm Springs Tribes and USGS to develop a study plan and conduct investigations for the hatchery/wild interactions study. Snorkeling and underwater video-monitoring techniques and technology were employed to estimate behavioral interaction between juvenile salmon and listed steelhead and bull trout. Adult Chinook from WSNFH were affixed with radio-tags and genetic samples were collected from hatchery and wild fish in order to compare the distribution, behavior, and reproductive success of wild and outplanted hatchery fish. In addition, radio-tags and PIT-tag technology will be used to monitor releases of juvenile salmon. The results of the study will be used in making management decisions at National Fish Hatcheries to minimize the risk to wild fish and conserve/recover listed fish.

Accomplishment: Developed new applications for PIT-tag technology and assessed migrations of bull and cutthroat trout at eight sites in the Columbia River Basin.

Fish Monitoring - Various management plans and ESA-related Biological Opinions have stressed the need to evaluate the distribution, freshwater habitat use, and migrations of imperiled populations of bull trout and cutthroat trout. Traditional monitoring methods (fixed traps, mark-recapture, and radio telemetry) are limited by high and low flows, labor costs, and excessive handling effects. The Service installed PIT tag interrogation units at Columbia River basin monitoring sites established in Washington and Oregon. Four locations on the Walla Walla River; two locations each on Chinook River and Abernathy Creek, and one location each on Gee Creek were the sites monitored. Data collected continues to demonstrate the utility of this new PIT-tag technology application to monitor and evaluate seasonal movements of fish; determine overwinter survival and migration timing; identify micro-habitat use; and examine smolt to adult survival. The application of this technology will be further developed and refined through the addition of Electronic Engineering staff that was selected and began work on this project in October 2003. This unique position brought critically needed electronics and engineering skills and expertise to further develop and refine the application of this technology.

Accomplishment: Monitored and evaluated the abundance and distribution of juvenile summer steelhead and bull trout in the upper reaches of Clear Creek during the summer of 2003.

Population Assessment - Kooskia NFH operates a fish weir on Clear Creek to collect adult



Kooskia weir on Clear Creek collects Chinook salmon broodstock.

spring Chinook salmon broodstock. Since Clear Creek supports populations of listed summer steelhead and bulltrout, monitoring and evaluation of weir operations is required as a Reasonable and Prudent Measure in the NOAA Fisheries 1998 BiOp for Artificial Propagation in the Columbia River Basin. During FY03, snorkel surveys were conducted in Clear Creek and associated tributaries to quantify population densities of bull trout and summer steelhead. Eleven sites totaling 2,798.62 m² were surveyed. No bull trout were observed. However, naturally occurring steelhead juveniles were observed at a density of .067 fish/m².

Accomplishment: Initiated a monitoring and evaluation project to determine if unmarked hatchery steelhead released in unused spawning habitat return to that area and are successful in increasing natural production.

Species Reintroduction - This project will determine if unmarked hatchery steelhead released into unused spawning habitat will return to these areas and increase natural production; or, will they stray into areas where they may pose a significant risk to ESA listed wild fish. Standard practice in the Columbia River Basin is to mark (fin clip) all hatchery steelhead. Beginning in 2000, unmarked juvenile hatchery steelhead were released in

the Snake River Basin to increase natural production where wild fish currently do not spawn. This action may negatively impact existing ESA listed steelhead stocks, as returning adult fish may stray into adjacent waters where wild fish are present. The genetic viability and productivity of wild stocks may decrease.

In FY 2003, a study plan was developed, telemetry receivers and radio tags were acquired and monitoring sites were prepared in the main-stem and South Fork Clearwater Rivers for nine fixed receivers. Cooperating with the Tribal, State, Federal, and private agencies, the Service proposes to document return rates of unmarked fish, determine where adult fish migrate and spawn using radio telemetry techniques, and assess negative impacts to wild fish, if any. Results from this project will be used for adaptive management, modifying the strategy for releasing unmarked fish if threats to ESA listed fish are documented.

Accomplishment: Conducted fish health exams on fish sampled from the Warm Springs NFH, the Warm Springs River, Shitike Creek, and Boulder Lake in the Deschutes River Watershed.

Fish Health Assessment - Managers do not fully understand the disease interactions of wild and hatchery fish. An understanding of the fish health relationship between hatchery and wild fish is necessary to meet hatchery production goals and objectives and to minimize adverse impacts of hatchery populations on wild fish. The WSNFH annually releases 750,000 fish into the Deschutes River system which contains wild Chinook salmon, steelhead and endangered bull trout. Since the inception of the hatchery, the Service's fish have been subjected to intensive health exams and management by applying state-of-the-art technology to detect

and, ultimately, prevent disease. This is to increase fish survival and to prevent disease transmission to the wild fish. Conversely, the pathogens of wild fish can also be transmitted through the river water to the captive hatchery fish. To address the issue of disease transmission between hatchery and wild fish in FY2003, wild lamprey juveniles, dace, rainbow trout, red-sided shiners, northern pikeminnow, brook trout, and Chinook salmon were examined for



Service biologist analyzing specimens.

disease pathogens. Clinical testing indicate that wild and hatchery salmon adults carry the same pathogens, an indication of their identical genetic origins, similar ocean destinations and food sources. Wild whitefish that had entered into the hatchery were found to carry columnaris bacteria that kills fish if water temperatures are high. At Shitike Creek where hatchery adult salmon have been outplanted to encourage natural production of salmon, wild rainbow trout were infected with coldwater disease. This might be a risk factor for the young Chinook salmon rearing in the stream. The results of the study will be used in making management decisions at National Fish Hatcheries to minimize the risk to wild fish and conserve/recover listed fish.

Harvest

XI. Harvest Management

DOI Strategic Goal	End Outcome Goal	Amount
Resource Protection	Sustain Biological Communities	\$229K

Regional conservation and recovery efforts strongly promote the implementation of terminal area and selective mixed stock fisheries as a means to provide additional fishery opportunities while providing protection for listed stocks. The Service plays a major role in addressing Indian and non-Indian harvest of Columbia River stocks. As a participant in the Pacific Fisheries Management Council (PFMC) process, a party to the U.S. v Oregon court case, and the agency responsible for the largest artificial production program in the Columbia Basin, the Service has a key role in implementing regional harvest management strategies. In FY 2003, the Service received funding to improve harvest management and the protection of listed wild stocks.

concern or listed stocks under the ESA. Although selective fisheries have been embraced in many west coast management forums to address the issue of trying to provide fishing opportunities in the midst of listed species protection needs, the technical aspects of the fishery impact assessment models have not kept pace with the developing fisheries. Unresolved technical issues relate to the calculation of catch and release mortality rates for unmarked fish - where unmarked fish are released only to be caught again repeatedly. Confidence in the models ability to properly assess impacts to stocks of concern will reduce the controversy of selective fisheries among the fishery agencies and ensure that harvest impacts are being held within allowable limits.

Accomplishment: Provided technical assistance in the effort to upgrade the fishery assessment models used in the Pacific Salmon Commission and Pacific Fisheries Management Council forums to evaluate the impact of selective fisheries on ESA listed wild stocks.

Harvest Modeling - This project provided technical assistance to and cooperated with other west coast fishery management agencies (e.g. State, Federal, Tribal) to develop, evaluate, and/or upgrade fishery assessment models and/or algorithms in order that selective fisheries can proceed to harvest abundant hatchery stocks while minimizing impacts to stocks of

Glossary

Acronyms and Abbreviations

APR: Artificial Production Review
LSRCP: Lower Snake River Compensation Plan
All H: Term used to describe all four recovery strategies: Hatcheries, Habitat, Hydro, and Harvest
NATURES: NATUral Rearing Enhancement System
BiOps: Biological Opinions
NFH: National Fish Hatchery
BKD: Bacterial Kidney Disease
NMFS: National Marine Fisheries Service
BLM: Bureau of Land Management
NOAA Fisheries: National Oceanic Atmospheric Administration (NOAA) otherwise known as NMFS
BOR: Bureau of Reclamation
NWF: National Wildlife Federation
CFS: Cubic Feet Per Second
NWPPC: Northwest Power Planning Council
COE: Corp of Engineers
ODFW: Oregon Department of Fish and Wildlife
CTWSRO: Confederated Tribes of Warm Springs Reservation of Oregon
PCR: Polymerase Chain Reaction
DNA: Deoxyribonucleic Acid
PIT: Passive Integrated Transponder
EIU: Egg Isolation Unit
RPA: Reasonable and Prudent Alternative
ELISA: Enzyme Linked Immunosorbent Assay
RPM: Reasonable and Prudent Measure
ESA: Endangered Species Act
RPA/M: Reasonable and Prudent Alternatives and Measures
ESU: Evolutionary Significant Unit
Service: Fish and Wildlife Service
FCRPS: Federal Columbia River Power System
Strategy: Final Basinwide Salmon Recovery Strategy also known as the “All H” Paper
FS: Forest Service
SRFB: Salmon Recovery Funding Board
FWS: Fish and Wildlife Service
TMDLS: Total Maximum Daily Loads
HCP: Habitat Conservation Plan
TMT: Technical Management Team
HGMP: Hatchery Genetic Management Plan
TRT: Technical Recovery Team
KNFH: Kooskia NFH
USGS: United States Geological Service
KVRI: Kootenai Valley Resource Initiative
WSNFH: Warm Springs National Fish Hatchery

List of Legal Authorities/Responsibilities

Anadromous Fish Conservation Act - Authorizes the Secretary of the Interior to enter into cooperative agreements with states in order to conserve, develop, and enhance anadromous fishery resources. Pursuant to such agreements, the Secretary is authorized to conduct investigations, carry out stream clearance activities, construct, install, maintain, and operate devices and structures for the improvement of feeding and spawning conditions, construct, operate, and maintain fish hatcheries, conduct studies and make recommendations regarding the development and management of bodies of water for the conservation and enhancement of the anadromous fish resource. The Service's activities in the Columbia River basin to conserve, develop, and enhance salmon and steelhead resources are generally supported by this Act.

Clean Water Act (Section 404) - The Clean Water Act's primary objective is to restore and maintain the integrity of the nation's waters. This objective translates into two fundamental national goals: eliminate the discharge of pollutants into the nation's waters, and achieve water quality levels that are fishable and swimmable.

The U.S. Service's involvement in implementing the CWA is related primarily to protecting wetlands through the Section 404 program administered jointly the Environmental Protection Agency and the U.S. Army Corps of Engineers. Dredged and fill material into waters of the United States are regulated under Section 404. This section requires permits for discharges of dredged or fill material into waters of the United States, including wetlands. Section 404 also includes specific reference to the Service in various aspects including review of applications for permits to discharge.

Comprehensive Environmental Response, Compensation, and Liability Act (Superfund) - Provides that responsible parties, including Federal landowners, investigate and clean up releases of hazardous substances. Trustees for natural resources may assess and recover damages for injury to natural resources from releases of ***hazardous substances and use damages for restoration***,

replacement or acquisition of equivalent natural resources.

Endangered Species Act - Under Section 7 of the ESA the Service is required to consult with NOAA Fisheries to insure that any action authorized, funded, or carried out by the Service is not likely to jeopardize the continued existence of endangered or threatened salmon and steelhead in the Columbia River basin, or result in the destruction or adverse modification of critical habitat for the listed species. The Service as an action agency has consulted with NOAA Fisheries on a variety of activities that may affect listed salmon and steelhead including operation of fish hatcheries, activities on National Wildlife Refuges, Service-sponsored habitat restoration programs on non-Federal land, and field studies that involve sampling of listed salmon and steelhead. In addition as a member of the Federal Caucus, Service was a co-author of the Conservation of Columbia Basin Fish - Final Basinwide Salmon Recovery Strategy, which outlines the expected improvements in hydro-power, habitat, hatcheries, and harvest needed to meet the goals of ESA and the NOAA Fisheries FCRPS BiOp.

For aquatic species, the Service has ESA authority over resident fish that spend a majority of their lives in the freshwater environment while NOAA Fisheries has authority over species like salmon and steelhead that spend a majority of their lives in the marine environment. Both agencies work closely to streamline consultations, coordinate recovery planning, promote implementation of effective actions to improve survival of listed species, and to ensure consistency in implementing the ESA, particularly where listed species under the jurisdiction of the two agencies overlap. For example, the Service and NOAA Fisheries jointly consulted with the action agencies on the operation of the FCRPS where the needs of listed Kootenai River white sturgeon, bull trout, and listed salmon and steelhead overlapped. The result was storage reservoir operations included in the two agencies' biological opinions that met the needs of all listed species. Finally, there are situations where NOAA

Fisheries is the action agency under Section 7 and would consult with the Service Ecological Service's program in areas where NOAA Fisheries's action effects resident listed species. For example, NOAA Fisheries approval of HCP's under the ESA or their adoption of Fisheries Management Plans could involve the need for consultation.

Federal Power Act - The Federal Energy Regulatory Commission (Commission) licenses non-Federal hydropower projects under the Federal Power Act. These include initial licenses for new projects, new licenses for existing projects where the license has expired, and exemptions for certain categories of projects. Licensing and relicensing of private hydroelectric power projects must include environmentally sound measures that provide for protection of the natural resources of the Nation. The Federal Power Act contains a number of specific provisions that apply directly or indirectly to Service responsibilities. The Service's role in hydropower licensing involves providing technical evaluations on the impacts of hydroelectric power projects to fish and wildlife resources. The Commission's regulations, as authorized by the Federal Power Act, and the Fish and Wildlife Coordination Act, require license applicants and licensees to consult with the Service prior to and after project licensing so the Service may provide the Commission with:

- recommendations for the protection, mitigation of damages to, and enhancement of fish and wildlife resources;
- mandatory terms and conditions to provide for the protection and utilization of Service lands upon which proposed hydropower projects may be located;
- mandatory prescriptions for fish passage

The Service reviews and provides comments, recommendations, terms and conditions, and prescriptions on numerous hydroelectric power projects in the Columbia River Basin and provides consultation on post-licensing studies and monitoring on many operating projects each year.

Federal Water Project Recreation Act - Authorizes the use of Federal water project funds for land acquisition to establish refuges for migratory waterfowl when recommended by the Secretary of the Interior.

Fish and Wildlife Act - Created the Service and established a national fish and wildlife policy that directs the Secretary of the Interior to conduct continuing investigations and prepare and disseminate information and make periodic reports to the public, to the President, and to Congress with respect to some seven areas, including availability, abundance, and biological requirements of fish and wildlife resources, statistics on sport fishing, and any other matters which in the judgment of the Secretary are of public interest in connection with any phases of fish and wildlife operations. The principal authority for requiring support for the Nation's fish resources is derived from 16 U.S.C. § 742f(a) (4), which requires the Secretary to take such steps as may be required for the development, advancement, management, conservation, and protection of fish and wildlife resources including, but not limited to, research, development of existing facilities, and acquisition by purchase or exchange of land and water or interests therein.

Fish and Wildlife Coordination Act - The Fish and Wildlife Coordination Act provides the basic authority for the Service's involvement in evaluating impacts to fish and wildlife from proposed water resource development projects. It requires that fish and wildlife resources receive equal consideration to other project features. It also requires that Federal agencies that construct, license or permit water resource development projects must first consult with Service, NOAA Fisheries, and State fish and wildlife agencies regarding the impacts on fish and wildlife resources and measures to mitigate these impacts. Full consideration must be given to U.S. Service recommendations.

Fish Restoration and Irrigation Mitigation Act - The Act authorizes the Secretary of the Interior, acting through the Service, to create a voluntary fish screen and fish passage program for irrigation projects in Oregon, Washington, Idaho, and western Montana. The Act aims to decrease fish mortality by offering financial assistance to landowners who construct fish screens or other fish-diversion structures such as ladders at entrances to irrigation intakes. These structures help prevent juvenile salmon and steelhead and resident fish from straying into irrigation canals where there is high mortality. Service is initiating a collaborative implementation strategy with state, private, and tribal partners.

Migratory Bird Treaty Act - Implements treaties between the United States and other countries for the protection of migratory birds and provides authority to the Secretary of the Interior to prohibit taking, killing, or possessing migratory birds unless and except as permitted by regulations. The Act provides the authority for the Service to participate in seabird predation activities related to salmon and steelhead recovery in the Columbia River estuary. The Service's workload with respect to seabird predation has increased significantly since the listing of salmon and steelhead.

National Environmental Policy Act - The Service prepares environmental assessments (EA) and environmental impact statements (EIS) related to its activities that impact salmon and steelhead in the Columbia River in order to comply with NEPA. The Service also routinely provides comments on other Federal agencies' actions that fall under NEPA. The listing of salmon and steelhead under the ESA and the potential impact of proposed Federal actions on listed species has increased the workload under NEPA. Through this process, the Service seeks to ensure that impacts to fish and wildlife resources are adequately described and that needed mitigation is provided.

National Wildlife Refuge System Improvement Act - The Act specifies that the Service "shall provide for the conservation of fish, wildlife, and plants, and their habitats within the National Wildlife Refuge

System; ensure that the biological integrity, diversity, and environmental health of the Systems are maintained...monitor the status and trends of fish, wildlife, and plants in each refuge." In response to the listing of salmon and steelhead and the general requirements of this Act, Service has significantly increased its monitoring of listed salmon and steelhead populations and increased salmon and steelhead restoration and recovery activities on National Wildlife Refuges in the Columbia River basin.

Northwest Power Planning and Conservation Act - The Service regularly provides recommendations to the NPPC on implementation of its Fish and Wildlife Program on program measures and issues related to mitigation, restoration, and recovery of salmon and steelhead. Under section 4(h)(7) of the act, the NPPC is required to give due weight to the recommendations, expertise, and legal rights and responsibilities of the Federal and the region's State fish and wildlife agencies and appropriate Indian tribes. As a Federal fish and wildlife agency, the Service provides recommendations to the NPPC on a variety of issues related to salmon and steelhead including biological objectives; operation of salmon and steelhead hatcheries (e.g. active participant in Artificial Production Review); river operations affecting salmon and steelhead; priority research, monitoring and evaluation; habitat restoration; and priorities for funding of projects to protect, mitigate, and enhance fish and wildlife affected by the Federal hydropower system.

Magnuson Fishery Conservation and Management Act - Established the Pacific Fishery Management Council with authority over the fisheries in the Pacific Ocean seaward of California, Oregon, Washington and Idaho. Under the Act Service is directed to participate as a non-voting member of the Pacific Fishery Management Council. Service staff serve on the Salmon Technical Team and the primary purpose of the six member team is to compile and analyze salmon stock status and fishery information for west coast salmon stocks and fisheries (including the Columbia River basin), and to analyze the impacts of fishery options.

Oil Pollution Act - Requires consultation with the Service for development of a fish and wildlife response plan to minimize risk to, and rehabilitate fish and wildlife resources and their habitat harmed by an oil discharge.

Pacific Salmon Treaty Act - Charges the United States Section of the Pacific Salmon Commission with responsibility for implementation of the Pacific Salmon Treaty between the United States and Canada. The Service must undertake certain activities on behalf of the Department of the Interior as required by the Pacific Salmon Treaty. Service is an alternate on the Southern Panel and participates on various technical teams including the chinook, coho, and chum salmon technical teams. Service also is responsible for index marking representative groups of hatchery fish at its hatcheries in the Columbia River basin. A recent agreement under the Pacific Salmon Treaty includes the establishment of abundance-based fishing regimes for major salmon intercepting fisheries in the U.S. and Canada; provisions to enhance bilateral cooperation; a commitment to improve how scientific information is obtained, shared, and applied to management of salmon; and a firm and complementary base for other salmon recovery efforts such as habitat protection and restoration.

Rivers and Harbors Act (Section 10) - The Rivers and Harbors Act of 1899 protects navigation and national security by regulating activities on navigable waterways of the United States. Section 10 regulates all structures and work within navigable waters. The Corps requires permits for construction, excavation, or deposition of materials in, over or under navigable waters. This includes marinas, piers, wharves, floats, bridges, pilings, etc; but it also includes any work that would affect the course, location, condition, or capacity of those waters. The Service does not have any specific authorities in the Rivers and Harbors Act that allow us to recommend measures to protect fish and wildlife resources. However, the Service provides comments and recommendations on Section 10 permits through the authorities in the Fish and Wildlife Coordination Act.

Sikes Act - Authorizes the Secretary of the Interior to cooperate with the Department of Defense, Energy, National Aeronautics and Space Administration, BLM, and State agencies in planning, developing, maintaining and rehabilitating Federal lands for the benefit of fish and wildlife and their habitat.

Transportation Equity Act for the 21st Century - The Transportation Equity Act for the 21st Century authorizes the Federal surface transportation programs for highways, highway safety, and transit for the 6-year period 1998-2003. One of the provisions of TEA-21 is to authorize a process of environmental streamlining to expedite the highway planning process without adversely affecting the environment. The Service has developed several cooperative agreements with State DOT's to ensure fish and wildlife resources are fully considered early in the highway transportation planning process. The intent is identify important fish and wildlife resources that might be affected by a proposed highway project and to develop avoidance, minimization, and compensation measures at the start of the planning process.

U.S. v. Oregon (Belloni Decision, 1969) - The Columbia River Fish Management Plan (CRFMP) or interim management agreements (pending agreement on a new CRFMP) are under the continuing jurisdiction of the Federal Court. The CRFMP or agreements provide a management framework within which the parties may exercise their sovereign powers in a coordinated and systematic manner in order to protect, rebuild, and enhance Columbia River fish runs above Bonneville Dam while providing harvests for both treaty Indian and non-Indian fisheries. The primary goals of the parties are to rebuild weak runs to full productivity and fairly share the harvest of upper river runs between treaty Indian and non-Indian fisheries in the ocean and Columbia River basin. The Service is a signatory to the Columbia River Fish Management Plans and interim agreements and is a member of the Technical Advisory Committee (TAC) and Production Advisory Committee (PAC). These two technical committees are charged with developing stock status information, reviewing impacts of harvest and production proposals, and coordinating other technical tasks required to implement the plans and agreements.

The Service is actively engaged in activities under U.S. v. Oregon because of its role in hatcheries, fish stock assessment, habitat and other activities to rebuild upper river runs, and because of the Indian trust responsibilities of the Federal Government.

Water Resources Development Act of 1976 -
Authorized the LSRCP which describes a program to compensate for fish and wildlife losses caused by the construction of Ice Harbor, Lower Monumental, Little Goose, and Lower Granite Lock and Dam projects on the lower Snake River. The Service administers operations, maintenance, and evaluation funds for fisheries operations under the LSRCP. Funding is provided to Service through a direct funding agreement with the Bonneville Power Administration. LSRCP facilities consist of 26 production, acclimation, and trapping facilities, as well as several fish health and monitoring and evaluation offices in Washington, Oregon, and Idaho. The facilities are operated and evaluated by the fisheries agencies of Oregon, Washington, and Idaho, the Service, and the Nez Perce and Umatilla tribes.

Tables

All H Category Project	FY 2001 Enacted	FY 2002-2003 Increase	FY 2003 Enacted *	FY 2004 Enacted **
Habitat	1,477	4,329	5,768	5,734
EIS/Consultation	797	914	1,700	1,690
Bull Trout & Other Fish Passage	170	1,030	1,192	1,183
Subbasin Planning	40	1,000	1,053	1,047
Instream Flow	-	955	949	943
Avian Predation	50	250	298	296
Partners for Fish and Wildlife	400	-	397	395
Lower Col R. Restoration	-	180	179	178
Hatcheries	889	2,701	3,567	3,903
Hatchery Reform/Fish Health	809	1,720	2,513	2,836 ***
Hatchery Monitoring & Evaluation	80	981	1,054	1,068
Hydropower	-	120	119	119
Monitor & Evaluate Bull Trout	-	120	119	119
Harvest	160	70	229	227
Lotic Harvest Impacts	160	70	229	227
Grand Total	2,526	7,220	9,683	9,983

* Includes 63 percent rescission that was enacted in the FY 2003 Omnibus Appropriation

** Includes both the 646 percent rescission that was enacted in the FY 2004 Interior Appropriation and 59 percent rescission that was enacted in the FY 2004 Omnibus Appropriation

*** Includes \$362K increase in FY 2004 for Hatchery Ops. & Maintenance as part of the USFWS Hatchery Revitalization Initiative

Tables

Program Element Project	FY 2001 Enacted	FY 2002-2003 Increase	FY 2003 Enacted *	FY 2004 Enacted **
Consultation (1112)	797	794	1,581	1,571
ESA Consultation	797	794	1,581	1,571
Recovery (1113)	-	1,250	1,242	1,234
Instream Flow	-	375	373	370
Subbasin Planning	-	250	248	247
Bull Trout & Other Fish Passage	-	505	502	499
Monitor & Evaluate Bull Trout	-	120	119	119
Partners for Fish & Wildlife (1121)	400	-	397	395
Habitat Restoration	400	-	397	395
Project Planning (1122)	-	180	179	178
Instream Flow	-	180	179	178
Coastal Program (1124)	-	180	179	178
Co. R Estuary Restoration	-	180	179	178
Environmental Contaminants (1130)	-	120	119	119
ESA Consultation	-	120	119	119
Migratory Birds (1231)	50	250	298	296
Avian Predation	50	250	298	296
Hatchery Ops & Maintenance (1311)	809	1,720	2,513	2,846
Hatchery Reform/Fish Health	809	1,720	2,513	2,856 ***
Anadromous Fish Mgt. (1331)	470	1,250	1,709	1,699
Limit Harvest Impacts	160	-	159	158
Subbasin Planning	60	750	805	800
Bull Trout & Other Fish Passage	170	-	169	168
Hatchery Monitoring & Evaluation	80	500	576	573
Fish & Wildlife Assistance (1332)	-	1,476	1,467	1,458
Instream Flow	-	430	397	395
Bull Trout & Other Fish Passage	-	525	522	519
Limit Harvest Impacts	-	70	70	69
Hatchery Monitoring & Evaluation	-	481	478	475
Grand Total	2,526	7,220	9,683	9,983

* Includes .65 percent rescission that was enacted in the FY 2003 Omnibus Appropriation.

** Includes both the .646 percent rescission that was enacted in the FY 2004 Interior Appropriation and .59 percent rescission that was enacted in the FY 2004 Omnibus Appropriation.

*** Includes \$362K increase in FY 2004 for Hatchery Ops & Maintenance as part of the USFWS Hatchery Revitalization Initiative

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